

United States
Circuit Court of Appeals
for the Ninth Circuit.

MAJESTIC ELECTRIC DEVELOPMENT COMPANY, a Corporation,

Appellant,

vs.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, a Corporation,

Appellee.

Transcript of Record.

Upon Appeal from the Southern Division of the
United States District Court for the
Northern District of California,
Second Division.

FILED

JAN 14 1921

F. D. MONCKTON,
CLERK

United States
Circuit Court of Appeals
For the Ninth Circuit.

MAJESTIC ELECTRIC DEVELOPMENT COMPANY, a Corporation,

Appellant,

vs.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, a Corporation,

Appellee.

Transcript of Record.

Upon Appeal from the Southern Division of the
United States District Court for the
Northern District of California,
Second Division.

INDEX TO THE PRINTED TRANSCRIPT OF RECORD.

[Clerk's Note: When deemed likely to be of an important nature, errors or doubtful matters appearing in the original certified record are printed literally in italic; and, likewise, cancelled matter appearing in the original certified record is printed and cancelled herein accordingly. When possible, an omission from the text is indicated by printing in italic the two words between which the omission seems to occur.]

	Page
Assignment of Errors of Plaintiff on Appeal from Order and Decree Entered in the Min- utes, October 4, 1920, and Final Decree Made and Entered November 1, 1920.....	160
Bill of Complaint for Infringement of Patent.	1
Bond on Appeal.....	166
Certificate of Clerk U. S. District Court to Transcript of Record.....	171
Citation	172
Decree	33
Judgment	33
Opinion Dismissing Bill.....	19
Order Allowing Appeal of Plaintiff from Order and Decree of October 4, 1920, and from the Final Decree of November 1, 1920.....	158
Order Allowing Withdrawal of Original Ex- hibits	168
Order Designating Judge Dietrich to Sit in This Court	16
Order Dismissing Bill, etc.....	17

Index.	Page
Order Enlarging Time to and Including January 20, 1921, to File Record and Docket Cause	174
Petition of Plaintiff for an Order Allowing Appeal from Order and Decree of October 4, 1920, and from the Final Decree of November 1, 1920.....	156
Praeepice for Transcript of Record.....	169
Second Amended Answer.....	7
Statement of Evidence Under Equity Rule 75 for the Purposes of Appeal.....	36
Stipulation as to Transcript of Record on Appeal	175
Stipulation in Re Statement of Evidence on Appeal	35
TESTIMONY ON BEHALF OF PLAINTIFF:	
BROWN, EDMUND N.....	37
Cross-examination	42
Redirect Examination	42
In Rebuttal	117
Cross-examination	118
HENRY, GEORGE J.....	45
Cross-examination	65
In Rebuttal	97
Cross-examination	107
In Rebuttal	126
Cross-examination	132
HILLER, J. R.....	44
SHOENBERG, MILTON H.....	43

Index.

Page

TESTIMONY ON BEHALF OF DEFENDANT:	
BEAM, VICTOR S.....	77
Cross-examination	86
Redirect Examination	97
Recross-examination	97
BEAM, VICTOR S. (Case No. 492).....	135
Cross-examination	151
Redirect Examination	155

In the Southern Division of the United States
District Court for the Northern District of
California, Second Division.

No. 493.

MAJESTIC ELECTRIC DEVELOPMENT COM-
PANY,

Plaintiff,

vs.

WESTINGHOUSE ELECTRIC & MANUFAC-
TURING COMPANY,

Defendant.

Bill of Complaint for Infringement of Patent.

Now comes the plaintiff in the above-entitled suit
and files this its bill of complaint against the defendant,
and for cause of action alleges:

1. That the full name of the plaintiff is Majestic
Electric Development Company, and at all times
hereinafter mentioned plaintiff was and still is a cor-
poration created under the laws of the State of Cali-
fornia and having its principal place of business in
the City and County of San Francisco, State of Cali-
fornia.

2. That the full name of the defendant is West-
inghouse Electric & Manufacturing Company, and at
all the times hereinafter mentioned said defendant
was and still is a corporation created under the laws
of the State of Pennsylvania, and having a regular
and established place of business in the Northern
District of California, Southern Division, to wit, at
the City and County of San Francisco, State of Cali-

fornia, with an agent engaged in conducting such business in said Northern District of California, Southern Division.

3. That heretofore, to wit, on and prior to July 10th, 1917, one Edmund N. Brown was the original and first inventor of a certain new and useful invention, to wit, an electric [1*] heater, which had not been known or used by others in this country before his invention thereof, nor patented nor described in any printed publication in this or any foreign country before his said invention thereof, or more than two years prior to his application for a patent, nor was the same in public use or on sale in this country for more than two years prior to his application for a patent in this country, and being such inventor, heretofore, to wit, on July 10, 1917, said Edmund N. Brown filed an application in the Patent Office of the United States praying for the issuance to him of letters patent of the United States for said new and useful invention.

4. That after the filing of said application and prior to the issuance of any patent thereon, said Edmund N. Brown for value received, by an instrument in writing sold and assigned to the plaintiff herein the aforesaid new and useful invention together with any and all letters patent that might be issued therefor on said application, and in and by said assignment requested the Commissioner of Patents to issue the said patent to the Majestic Electric Development Company, a corporation, its successors and

*Page-number appearing at foot of page of original certified Transcript of Record.

assigns, which said assignment in writing was filed in the Patent Office of the United States prior to the issuance of any letters patent on said application.

5. That thereafter, to wit, on October 30, 1917, letters patent of the United States for the said invention, dated on said last named day, and numbered 1,245,084, were issued and delivered by the Government of the United States whereby there was granted to the plaintiff, its successors and assigns, for the full term of seventeen years from October 30, 1917, the sole and exclusive right to make, use and vend the said invention throughout the United States of America and the territories thereof, and a more particular description of the invention patented in and by said letters patent will fully appear from the said letters patent [2] themselves which are ready in court to be produced by the plaintiff, and of which the plaintiff hereby makes profert.

6. That ever since the issuance of said letters patent plaintiff has been and still is the sole owner and holder thereof and of the rights, liberties, and privileges thereby conferred, and has made, sold and used electric heaters containing and embracing the invention patented in and by said letters patent, and upon each and every one of said heaters so sold the date and number of the aforesaid letters patent was marked.

7. That since the issuance of the said letters patent and within two years last past, at the City and County of San Francisco, in the Northern District of California, Southern Division, and at other places

in the Northern District of California, and outside of the Northern District of California, without the license or consent of the plaintiff, the defendant herein, Westinghouse Electric & Manufacturing Company, has made, used and sold electric heaters containing and embracing the invention patented in and by said letters patent, No. 1,245,084, and has infringed upon the same and upon each and all of the claims thereof.

8. That by reason of said infringement plaintiff has suffered damages and, as plaintiff is informed and believes, defendant has realized profits, but the exact amounts of said damages and profits are unknown to the plaintiff.

9. That the plaintiff has requested the defendant to desist from further infringement of said letters patent and to account to plaintiff for the aforesaid damages and profits, but defendant has failed and refused to comply with the said request or any part thereof.

10. That the defendant is now continuing said infringement upon said letters patent daily at the City and County of [3] San Francisco, in the State of California, and elsewhere, and threatens to continue the same, and unless restrained therefrom by this Honorable Court will continue the same, whereby plaintiff will suffer great and irreparable injury and damage for which it has no plain, speedy or adequate remedy at law.

WHEREFORE, plaintiff prays as follows:

First: That a final decree be entered in favor of

plaintiff, Majestic Electric Development Company, and against the defendant, Westinghouse Electric & Manufacturing Company, perpetually enjoining and restraining the said defendant, its officers, servants, agents, attorneys, workmen and employees, and each of them, from making, using or selling the device or devices described, claimed and patented in and by the said letters patent either directly or indirectly, or from contributing to any such infringement.

Second: That upon the filing of this bill of complaint a preliminary injunction be granted to the plaintiff enjoining and restraining the defendant, Westinghouse Electric & Manufacturing Company, its officers, servants, agents, attorneys, workmen and employees, and each of them, until the further order of this Court, from making, using or selling the device or devices described, claimed and patented in and by the said letters patent, and from making, using or selling any device or devices in colorable imitation thereof, and from infringing upon said letters patent either directly or indirectly or from contributing to any such infringement.

Third: That plaintiff have and recover from the defendant Westinghouse Electric & Manufacturing Company the gains, profits and advantages realized by the defendant and the damages suffered by the plaintiff from and by reason of the infringement aforesaid, together with costs of suit, and such other and further relief as to the Court may seem proper

and in accordance with equity and good [4] conscience.

MAJESTIC ELECTRIC DEVELOPMENT
COMPANY.

By EDMUND N. BROWN,
Secretary.

JOHN H. MILLER,
Attorney and Counsel for Plaintiff,
723-6 Crocker Building,
San Francisco, California.

United States of America,
Northern District of California,
City and County of San Francisco,—ss.

Edmund N. Brown, being duly sworn, deposes and says: That he is secretary of Majestic Electric Development Company, plaintiff, in the within entitled case; that he has read the foregoing bill of complaint and knows the contents thereof; that the same is true of his own knowledge, except as to matters therein stated on information and belief, and as to those matters he believes it to be true.

EDMUND N. BROWN.

Subscribed and sworn to before me this 1st day of November, A. D. 1919.

[Seal] EUGENE P. JONES,
Notary Public in and for the City and County of
San Francisco, State of California.

[Endorsed:] Filed Nov. 1, 1919. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [5]

(Title of Court and Cause.)

Second Amended Answer.

The answer of Westinghouse Electric & Manufacturing Company, the above-named defendant, to the bill of complaint of the above-named plaintiff.

This defendant, now and at all times hereafter, saving and reserving to itself all and all manner of benefit and advantage of exception which may be had, or taken, to the many errors, uncertainties, imperfections and insufficiencies in said bill of complaint contained, for answer thereunto, or into so much and such parts thereof as this defendant is advised that it is material or necessary to make answer unto, answering, says:

1. As to whether the full name of the plaintiff is Majestic Electric Development Company, and whether the plaintiff was and still is a corporation created under the laws of the State of California and has its principal place of business in the City and County of San Francisco, State of California, defendant does not know and leaves the plaintiff to make proof thereof.

2. Answering further, this defendant admits that the full name of defendant is Westinghouse Electric & Manufacturing Company and that it was and still is a corporation of the State of Pennsylvania and has a regular and established place of business in the City and County of San Francisco, State of California, with an agent conducting such business.

3. Answering further, this defendant admits

that one Edmund N. Brown, on July 10, 1917, filed an application in the United States Patent Office praying for the issuance to him of letters patent of the United States for an alleged new and useful [6] invention, to wit, an electric heater, but denies that the same had not been known or used by others in this country before his alleged invention thereof or patented or described in any printed publication in this or any foreign country before his alleged invention thereof or more than two years prior to his application for letters patent, and further denies that the said alleged invention had not been in public use or on sale in this country for more than two years prior to the said application for letters patent of the United States.

4. Answering further, as to whether the said Edmund N. Brown, for value received, sold and assigned to the plaintiff herein, by an instrument in writing, the alleged invention covered by the said application for letters patent, together with any and all letters patent that might be issued thereon and by such assignment requested the Commissioner of Patents to issue the letters patent to the Majestic Electric Development Company, the plaintiff herein, and whether the said assignment, in writing, was filed in the Patent Office of the United States prior to the issuance of any letters patent on the said application, this defendant does not know and leaves the plaintiff to make proof thereof.

5. Answering further, this defendant admits that letters patent No. 1,245,084 were issued to the Majestic Electric Development Company, assignee

of Edmund N. Brown of San Francisco, California, on October 30, 1917.

6. Answering further, as to whether, ever since the issuance of said letters patent, the plaintiff has been and still is the sole owner and holder thereof and of the rights, liberties and privileges thereby conferred and has made, sold and used electric heaters containing and embracing the alleged invention patented in and by said letters patent, and as to whether, upon each and every [7] one of such heaters as plaintiff may have sold, has been marked the date and number of the aforesaid letters patent, defendant does not know and leaves plaintiff to make proof thereof.

7. Answering further, this defendant denies that, since the issuance of said letters patent, it has made, used and sold, and is now making, using or selling within the City and County of San Francisco, in the State of California, in the Northern District of California, Southern Division, or elsewhere, electric heaters containing or embracing the invention patented in the said letters patent, or that it has in any manner infringed upon the rights secured to the plaintiff by virtue of said letters patent or that any electric heaters made and sold by this defendant were, or are, infringements upon the said letters patent, or anything described and claimed therein.

8. Answering further, this defendant denies that it has realized profits by reason of any infringement of the aforesaid letters patent or that the plaintiff

10 *Majestic Electric Development Company vs.*

has suffered damages by reason of any such infringement.

9. Answering further, this defendant admits that it has been requested by the plaintiff to desist from infringing said letters patent and to account to plaintiff for alleged damages and profits, but this defendant denies that it has failed and refused to comply with any such request or any part thereof.

10. Answering further, this defendant denies that it is now continuing infringement upon said letters patent, directly or otherwise, at the City and County of San Francisco, in the State of California, and elsewhere, and that it threatens to continue any such infringement.

11. Answering further, this defendant denies that the alleged improvement in electric heaters, described and claimed in said letters patent No. 1,245,084, contains and embodies any material beneficial advance over what had previously been known to those skilled in the art, but, on the contrary, avers the fact to be that [8] the claims of the said patent and each of them are invalid and void on the following grounds:

(a) Because the said Edmund N. Brown was not the original and first inventor or discoverer of the invention alleged to be described and claimed in said letters patent or of any material or substantial part thereof, but that the same and all material or substantial parts of the alleged invention had been patented or described in printed publications and letters patent prior to the date of the alleged invention of the said Edmund N. Brown, as follows:

LETTERS PATENT OF THE UNITED STATES.

	No.	Date.	Patentee.
	8,101	May 20, 1851	R. Jobson.
Design	45,317	Feb. 24, 1914	A. A. Warner.
Design	46,922	Feb. 9, 1915	F. X. Chassaing.
Design	51,043	July 17, 1917	E. N. Brown.
Design	51,253	Sept. 11, 1917	E. N. Brown.
	235,199	Dec. 7, 1880	A. G. Bell.
	235,497	Dec. 14, 1880	A. G. Bell & S. Tainter.
	492,247	Feb. 21, 1893	W. E. W. Ulmer.
	530,016	Nov. 27, 1894	J. Cinnamon.
	654,630	July 31, 1900	H. V. Hayes & E. R. Cram.
	658,706	Sept. 25, 1900	H. J. Dowsing.
	684,459	Oct. 15, 1901	E. F. Porter.
	881,017	Mar. 3, 1908	W. E. H. Morse.
	893,994	July 21, 1908	F. C. Green.
	902,003	Oct. 27, 1908	A. D. Rathbone.
	921,476	May 11, 1909	W. A. Soles.
	988,824	Apr. 4, 1911	L. A. Sagendorph.
	1,084,375	Jan. 13, 1914	G. B. Swinehart.
	1,097,282	May 19, 1914	L. W. Andersen.
	1,109,551	Sept. 1, 1914	M. H. Shoenberg.
	1,120,003	Dec. 8, 1914	A. A. Warner.
	1,147,951	July 27, 1915	F. T. Kitchen.
	1,187,968	June 20, 1916	E. N. Cherry.
	1,205,011	Nov. 14, 1916	Phillips & Anderson.

LETTERS PATENT OF GREAT BRITAIN.

No. 19,311 of 1894.

No. 11,013 of 1910.

No. 2,764 of 1912.

No. 19,971 of 1913.

No. 102,070 of 1916. [9]

PUBLICATIONS.

Page 79 of the issue of Jan. 25, 1912, The Electrical Times, published in London, England.

Page 37 of the issue of Jan. 11, 1912, The Electrical Times.

Page 239 of the issue of Mar. 7, 1912, The Electrical Times.

Page 362 of the issue of Mar. 6, 1913, The Electrical Times.

Page 364 of the issue of Mar. 6, 1913, The Electrical Times.

Page 214 of the issue of Oct. 3, 1913, the Supplement to "The Electrician," published in London, England.

Page 353 of the issue of Oct. 9, 1913, The Electrical Times.

Page 591 of the issue of Dec. 4, 1913, The Electrical Times.

Page 12 of the issue of Oct. 16, 1914, the Supplement to "The Electrician."

Page 19 of the issue of May, 1915, Electrical Record, published in New York, N. Y.

Page 162 of the issue of Aug. 31, 1916, The Electrical Times.

Page 14 of the issue of May, 1907, Electrical Record, published in New York, N. Y.

Advertising insert—page two of the Supplemental to "The Electrician" of the issue of September 20, 1912.

Page 163 of the issue of Aug. 16, 1912, the Supplement to "The Electrician."

Pages 1 and 11 of the Oct. 3, 1906, issue of "Prometheus," published by Dr. Otto N. Witt in Berlin, Germany.

Also in many other letters patent and printed publications not now known to this defendant, but which, when discovered hereafter, defendant prays leave of the Court to furnish and concerning which defendant prays leave to incorporate data in this, its answer, by suitable amendment thereof.

(b) Because, in view of the state of the art in respect to electric heaters prior to, or at the time of, the alleged invention of the said Edmund N. Brown, the supposed improvement described [10] and claimed in said letters patent was not a patentable invention, discovery or improvement but comprised mere selections and adaptations from prior known structures requiring no invention but being within the domain of mere judgment and skill in the art and, in view of such prior art, this defendant refers to and hereby makes a specific part of its answer, the several printed publications and letters patent hereinbefore cited.

(c) Because, defendant is informed and believes, the said Edmund N. Brown was not the original and first inventor of the alleged invention, discovery or improvement described and claimed in said letters patent or any material or substantial part thereof; that, prior to any such invention by said Edmund N. Brown, said invention, discovery or improvement was publicly known to, and used by, others, at places in this country, to wit:

Alonzo A. Warner and Landers, Frary & Clark, at New Britain, Connecticut, and elsewhere.

(d) Because, as defendant is informed and believes, the Majestic Electric Development Company, the plaintiff herein, manufactured, publicly offered for sale and sold electric heaters like or substantially like that shown, described and claimed in the said letters patent No. 1,245,084, in the City and County of San Francisco, in the State of California, and elsewhere, and that such heaters were so sold and were publicly used more than two years prior to the 10th day of July, 1917.

(e) Because, as defendant is informed and believes, one Alfred R. Huntington, formerly of San Francisco, California, now of Riverside, California, was the originator of the electric heater for which said letters patent No. 1,245,084 were granted to Edmund N. Brown, and the plaintiff herein and said Edmund N. Brown surreptitiously and unjustly obtained the said letters patent for that which was in fact invented or originated by another, to wit, the said Alfred R. Huntington, who was using [11] reasonable diligence in adapting and perfecting the same.

12. Further answering, this defendant avers and says that, in view of the proceedings had and taken in the United States Patent Office during the prosecution of the application for the said letters patent No. 1,245,084, the claims forming part of the said letters patent cannot lawfully be construed as covering and embracing any device manufactured and sold by this defendant, or any substantial or

material part thereof, but that said claims, if held to be valid at all, must be so narrowly construed as not to cover or include the devices so manufactured and sold.

13. Wherefore, the said letters patent are null and void and have no effect to secure the plaintiff any exclusive right in or under the subject matter of any of the claims of the said letters patent.

14. This defendant denies that it has done any act or thing, or proposes to do any act or thing, which entitles the said plaintiff to an injunction or to an accounting or to any other relief.

All of which defenses said defendant is ready to further maintain and prove as this Honorable Court shall direct, and it prays to be hence dismissed with its costs in this behalf most wrongfully sustained.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY,
By T. P. GAYLORD,
Acting Vice-president.

Solicitor for Defendant.

WESLEY G. CARR,
Of Counsel. [12]

State of Pennsylvania,
County of Allegheny,—ss.

T. P. Gaylord, being duly sworn, deposes and says:

I am acting vice-president of the Westinghouse Electric & Manufacturing Company, the above-named defendant; I have read the foregoing amended answer to the bill of complaint in the suit

of Majestic Electric Development Company, Plaintiff, vs. Westinghouse Electric & Manufacturing Company, Defendant, and know the contents thereof, and the same is true of my own knowledge, except as to the matters therein stated on information and belief, and as to those matters I believe it to be true.

T. P. GAYLORD,
Acting Vice-president.

Sworn to and subscribed before me this first day of May, 1920.

[Seal]

E. E. LITTLE,
Notary Public.

My commission expires at end of next session of Senate.

[Endorsed]: Filed June 9, 1920. Walter B. Maling, Clerk. [13]

(Order Designating Judge Dietrich to Sit in This Court.)

WHEREAS, in my judgment the public interest so requires, I hereby designate and appoint the Honorable FRANK S. DIETRICH, United States District Judge for the District of Idaho, to hold the District Court of the United States for the Northern District of California, during the months of August and September, 1920, and to have and exercise within said district the same powers that are vested in the judges thereof.

WITNESS my hand hereto this 23d day of August, 1920.

W. B. GILBERT,
Senior Circuit Judge of the Ninth Circuit.

[Endorsed]: Filed Aug. 24, 1920. W. B. Maling,
Clerk. [14]

At a stated term, to wit, the July term, A. D. 1920, of the Southern Division of the United States District Court for the Northern District of California, Second Division, held at the court-room in the City and County of San Francisco, on Monday, the 4th day of October, in the year of our Lord one thousand nine hundred and twenty. Present: The Honorable MAURICE T. DOOLING, District Judge.

No. 493—EQUITY.

MAJESTIC ELECTRIC DEVELOPMENT CO.

vs.

WESTINGHOUSE ELECTRIC & MNFG. CO.

(Order Dismissing Bill, etc.)

In accordance with the opinion of Honorable Frank S. Dietrich, United States District Judge for the District of Idaho (before whom this suit was heretofore tried), which said opinion is this day filed, it is ordered that the bill herein be and the same is hereby dismissed, with costs to defendant, and that a decree be signed, filed and entered accordingly. [15]

In the United States District Court, Northern District of California, Second Division.

No. 492.

MAJESTIC ELECTRIC DEVELOPMENT COMPANY,

Plaintiff,

vs.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY,

Defendant.

No. 493.

MAJESTIC ELECTRIC DEVELOPMENT COMPANY,

Plaintiff,

vs.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY,

Defendant.

No. 544.

MAJESTIC ELECTRIC DEVELOPMENT COMPANY,

Plaintiff,

vs.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY,

Defendant.

No. 499.

MAJESTIC ELECTRIC DEVELOPMENT COMPANY,

Plaintiff,

vs.

HOLBROOK, MERRILL & STETSON, a Corporation,

Defendant.

(Opinion Dismissing Bill.)

JOHN H. MILLER, Attorney for Plaintiff.

WESLEY G. CARR, DAVID L. LEVY, NATHAN HEARD, and SAMUEL KNIGHT, Attorneys for Defendants. [16]

DIETRICH, District Judge:

Four suits for infringement (numbers 492, 493, 499 and 544) were tried consecutively, in a large measure upon the same evidence, and have now been submitted upon the same argument. In each of them the Majestic Electric Development Company is the plaintiff; the Westinghouse Electric & Manufacturing Company is the defendant in numbers 492, 493 and 544, and Holbrook, Merrill & Stetson in 499. Numbers 492 and 499 are for infringements of United States design patent No. 51,043, issued July 17, 1917, to the plaintiff company, as the assignee of Edmund N. Brown, patentee, whose application therefor was filed May 28, 1917. Number 493 is for infringement of mechanical or utility patent numbered 1,245,084, issued by the United States on Oc-

tober 30, 1917, to the plaintiff, as the assignee of Edmund N. Brown, patentee, whose application therefor was filed July 10, 1917. And number 544 is for infringement of design patent numbered 51,253, issued by the United States on September 11, 1917, to the plaintiff, as assignee of Edmund N. Brown, patentee, upon an application filed July 10, 1917. Hence three patents are in suit:

Design patent No. 51,043, applied for May 28, 1917,
issued July 17, 1917.

Design patent No. 51,253, applied for July 10, 1917,
issued September 11, 1917.

Utility patent No. 1,245,084, applied for July 10,
1917, issued October 13, 1917.

All of the patents relate to a portable electric heater or its casing, and cover substantially the same device. It will be more convenient first to dispose of the suit involving the utility patent. The claims are as follows:

“1. An electric heater, comprising a concavo-convex reflector, a heating unit supported at substantially the focus of said reflector, an annular member extending outwardly from [17] the margin of said reflector, and a protective cage having guard wires arched between opposite sides of said annular member.

2. An electric heater, comprising a concavo-convex reflector, a heating unit supported at substantially the focus of said reflector, an annular member extending outwardly from the margin of said reflector, and a protective cage of arched guard wires hinged to said annular member so

that it may be swung outwardly from the reflector.

3. An electric heater, comprising a concavo-convex reflector, a heating unit supported at substantially the focus of said reflector, a concavo-convex casing extending over the convex side of said reflector and spaced therefrom except at the margins, said casing having an annular portion extending outwardly from the margin of said reflector, and a protective cage having guard wires arched between opposite sides of said annular portion.

4. An electric heater, comprising a concavo-convex metal reflector, a heating unit in space relation thereto, said reflector being provided with apertures having their margins bent to form flanges, insulating means upon either side of said flanges, and connecting devices extending through said insulating means and connected to the terminals of said heating unit."

In the specifications we are advised that the invention relates to improvements in electric heaters, in which the heat rays generated by a resistance coil or heating unit are reflected from a highly polished surface, and, further, that one of the main purposes of the invention is to provide means by which the highly heated portions of the device are inclosed by protecting members. While the phrase "beam heater" is not used in the application for patent, the device is so referred to and characterized in the trade. The purpose thereof is by reflection to concentrate the radiant energy upon a comparatively

small area, and thus to furnish the desired measure of heat within [18] the range of the "beam," without the necessity of heating to so high a degree the entire space in the room. Admittedly an ideal beam, of substantially parallel rays, cannot be realized, and the various devices used for the purpose only approximate such a result, some more closely than others. It is also well understood that the physical laws relating to the reflection of heat are the same as those pertaining to the reflection of light.

The position of the plaintiff is that the invention disclosed by the patent in suit is generic, and that thereby Brown introduced a broad fundamental idea theretofore unknown in the art, whereas the defendant contends that he only embodied a familiar conception in a slightly different form of mechanism. Correctly, it is thought, counsel for the plaintiff so defines the underlying issue, and unless in that respect its position is sustained it cannot succeed. Considerable testimony, it is true, was offered to show that certain members of the defendant's heater are the functional equivalents of similar parts of the patented device. But if the patent is held to cover, not a generic idea, but only minor improvements in a known mechanism, there is no infringement. It is possible, of course, to characterize the turned-over edge of the defendant's reflector as a flange, and to find that in a slight degree it performs the function for which the annular member or flange illustrated in the Brown patent was designed, but such an effect is merely incidental. Its primary purpose is to give to the reflector strength and a finished

appearance. It is to be observed that the reflecting member of the plaintiff's heater also has a turned-over edge, so that if we eliminate the annular flange we still have a reflector very closely corresponding to the reflecting member of the defendant's heater, including the turned-over edge, and hence the novelty or patented feature in the Brown device, namely, the broad [19] flange, to which the claims doubtless relate, is not found in the defendant's heater at all. The correctness of this view may be readily demonstrated by removing the reflector in the plaintiff's heater from its casing and thus separating it from the protective flange.

The defendant's heater has no casing by means of which in the plaintiff's device the back of the reflector is protected, and therefore there can be no contention of infringement in that respect.

There is no novelty in the plaintiff's wire guard or cage, unless it be in the hinging device, and the defendant's guard is not hinged.

If valid at all, the fourth claim must be narrowly construed, for the necessity of insulation and generally the means by which it is accomplished are matters of familiar knowledge, and such novelty, if any, as the claim discloses must be found in the minute details of construction; but in such details the defendant's insulating and connecting devices are substantially different.

If, then, the plaintiff can succeed only upon the theory that the invention is generic, is such a theory tenable? Admittedly the language employed in the patent application does not aptly express a claim of

that character. Nowhere does the applicant suggest the view that he has discovered the principle of a "beam heater," or any broad, fundamental idea in relation thereto. Upon the other hand, there is an implied recognition of the fact that the principle has already found expression in the art. One of the main purposes of the invention, the application declares, is to provide, not a beam heater or a beam of radiant energy, but the means for enclosing and protecting the highly heated members of such a heater. And when we consider the prior art, with which Brown was doubtless familiar, [20] the reason for limiting his claims to minor improvements, and particularly to protective devices, becomes apparent. He was at the head of the plaintiff company, which at the time was actively engaged in manufacturing and marketing beam heaters, under the Shoenberg patent, of which it was the assignee. (United States No. 1,109,551, issued September 1, 1914.) And it is difficult to resist the conclusion that, when the plaintiff's heater No. 7, illustrated in the patent in suit, was first put on the market in 1916, the plaintiff understood and assumed that it was protected by the Shoenberg patent. That in so far as concerns the general principle or generic idea this patent anticipates the one in suit is scarcely open to question. The invention is described as relating to electric heaters or radiators in which, as here, "the heat waves generated by resistance coil are directed by a polished metal reflector." Even in certain details now emphasized by the plaintiff there is substantial identity, for Shoenberg also provided both a wire

guard for the front and a protective casing for the back of the reflector. Distinction is sought to be made because the reflector illustrated in the Shoenberg patent differs in contour from the one illustrated in the Brown patent, but admittedly this difference is not of the essence. The latter also differs from the one used by the defendant, in that the one is hemispherical and the other parabolic. It is not a question of the specific form illustrated, but of the principle involved and the scope of the claims of the patent, and it would hardly be contended that one manufacturing a device in all other respects like that illustrated in the Shoenberg patent could escape a charge of **infringement** by showing that he used a purely parabolic reflector. That patent is broad enough to embrace either a parabolic or hemispherical reflector. It refers to the reflector merely as a "reflector," without specifying the form, or as being "dome-like," or "hemispherical," or as having an "inner concave surface." But it discloses [21] the purpose and principle or generic idea quite as clearly as does the patent in suit, and if it does not fully anticipate the latter, it is only because of the wide annular flange in the later device and possibly certain details in the matter of insulating the conducting wire and connecting it with the resistance coil. One has only to glance at the photograph (Defendant's Exhibit "E") of plaintiff's exhibit at the Panama Exposition to see how fully the general principle of such a heater had already in 1914 found expression in the art. It is true that the types of reflector illustrated in the Shoenberg patent and em-

ployed by the plaintiff prior to the patent in suit created a less perfect beam, but the difference is in degree only. In this respect the defendant's heater is an advance upon the one put out by the plaintiff under the patent in suit. But aside from the Shoenberg patent, the principle is clearly disclosed in the earlier patents and in the prior art. In English patent No. 12,320, Kempton claimed that by the use of a reflector of "parabolic or conical shape," located in a fireplace or in open space, for the purpose of throwing the heat into the room, gas could be used for heating purposes as cheaply as coal. He shows a gas jet in the same relation to the reflector as here the resistance coil. The principle is suggested in the Morse patent (United States No. 881,017, March 3, 1908), illustrating a device for applying heat to a portion of the body, to be used in the practice of therapeutics. In the English patent for the "Simplex," (No. 19,971, September 4, 1914), there is a very complete disclosure. True here again the reflector illustrated has the configuration of a cone, but the inventor's preference for this form seems to rest upon considerations of economy of construction. He adds that it may be "parabolic or the like contour." The heating element both in form and in its relation to the reflector closely resembles that [22] of the defendant's device, and the front of the reflector is fitted with a wire guard. The object of the invention we are informed "is to provide an apparatus of convenient form in which the radiant heat issues in the form of a condensed beam of rays, divergent, approximately parallel, or convergent, as

the case may be, and adapted to be pointed in any desired direction, horizontally or vertically." It would be difficult to state the principle more clearly or comprehensively. This device was manufactured and generally advertised before the Brown application was filed. Material also are the Warner patent of December 8, 1914 (United States, No. 1,120,003), and the Geiger patent of August 8, 1916 (United States, No. 1,194,168), and the Taylor patent of November 16, 1916 (English, No. 102,070). Note-worthy also are the "Ferranti Fires," devices in the market and more or less generally advertised as early at least as 1911, as appears from the trade literature offered in evidence.

THE DESIGN PATENTS.

One of these patents covers a casing of the precise form illustrated in the mechanical patent just considered, and the other a casing similar in form, exclusive of the wide annular flange. There could be, and of course is, no claim for size, color, or material, nor, as I understand, does the patent extend to the supporting standard or pedestal, which is of the common telephone type. The patented designs, therefore, relate to the reflector and the protective devices, viewed, of course, in connection with the attendant heater element.

The first design, the one with the wide annular flange (No. 51,043), is not thought to be infringed by the defendant's devices. There are neither reproductions nor colorable imitations. True, there are points of resemblance; so there are also points of resemblance between these devices and the com-

mon telephone and electric fan. In all reflectors, whether for headlights or [23] heaters, there are similarities of appearance. So common is a concavo-convex reflector that the word reflector alone immediately suggests such a device. But taking the heaters here as a whole and excluding from consideration slight differences of detail, there are two important differentiating features: Whatever may be said in support of the view that the turned-over edges of the defendant's reflectors are the functional equivalents of the broad annular flange in the plaintiff's heater, clearly in so far as affects appearance they are wholly dissimilar, and the broad flange is a conspicuous differentiating feature of the plaintiff's design. So of the heater element. As shown by the testimony of one of the plaintiff's witnesses, who first observed the Westinghouse heater upon passing a show-window where it was displayed, this is an outstanding feature in the appearance of the device,—the attention is arrested by it; and the incident so testified to is in accord with my own experience during the course of the trial. When it was necessary quickly to identify the plaintiff's device, grouped as it frequently was with many others in the courtroom, my eyes involuntarily sought the element as the most conspicuous distinguishing mark. If, therefore, we consider the entire assemblage—the reflector, the protective members, and the element—as the design, there is substantial dissimilarity in appearance.

But in the second place, in so far as they are alike, the plaintiff's casings, as well as those of the defendants, are entirely devoid of purely ornamental fea-

tures, either of form or drapery; they are nude utilities. That, of course, is not to say that they are without comeliness. By reason of their simplicity and symmetry and the "glow," they may be pleasing to the eye; but the point is that they are bare mechanisms, no parts or lines of which can be dispensed with or substantially altered [24] without impairing their utility, and one cannot, under cover of a design patent, debar others from employing the mechanical means necessary to give effect to a known and useful mechanical principle, however pleasing to the eye such requisite mechanism may be.

In the third place, unless limited to the precise form illustrated in the drawing, the plaintiff's design is anticipated in prior patents, to some of which reference has already been made, and, in view of the prior art, is without invention. Indeed it is difficult to perceive upon what basis a claim of patentable novelty for No. 51,253, the design without the annular flange, can be predicated. The casing shown is simply a reflector of the most familiar type, old in the art, and without novelty either in configuration or feature. True, upon placing the device of this design as actually manufactured side by side with the heater actually manufactured by the plaintiff under the Shoenberg patent, we have a substantial contrast in appearance, but the contrast is of material, color, and size, and not of form. Make both of the same size and finish them both in nickel or copper, and we have similarity instead of contrast. Who, without having the specific object in mind, would, after observing with reasonable care the drawing of patent

51,253, and thereupon being handed a photograph of the plaintiff's exposition exhibit, say with confidence that the device covered by the drawing is not shown in the photograph? The point is that in the absence of contrasting color or size there is a striking similarity in general appearance. Moreover, the design is almost identical with that shown in Figure 1 of the Taylor patent above referred to. (English, 102,070.) Substantial identity is expressly conceded by counsel for the plaintiff, who, however, contests the priority of the Taylor patent. It is true that while this patent was applied for on January 11, 1916, it was not finally issued until November 15, 1916. It is further true that Brown's "invention," as disclosed [25] in his mechanical patent and his design patent 51,043 (covering the annular flange) was made as early as April, 1916, although the patents were not applied for until the following year. But if there is any evidence that the design invention of patent 51,253 antedates the application, which was filed July 10, 1917, it has escaped my attention. It is not without significance that in the application for the Taylor patent, made before any of the Brown "inventions," the applicant carefully limited her claim with the explanation that she was "aware that it is not broadly new to construct an electric radiator with a resistance wire wound spirally upon a tubular member made of refractory material, such resistance element being mounted in front of a reflector, with a protecting guard in front of the element." In its more conspicuous features the plaintiff's design also closely resembles the Warner device, the parabolic

“Simplex,” and the “Ferranti Fires.” If it be said that the element in the Warner heater distinguishes its general appearance, the answer is that, as already noted, such distinction also exists between the plaintiff’s designs and the alleged infringing devices.

As bearing upon the question of invention in either the mechanical or the design patents, or both, plaintiff puts great stress upon the fact that following the placing on the market of its No. 7 heater (the device with the broad annular flange), there was an increased demand and it soon went into general use, but while the fact is to be recognized as having weight, I have not deemed it sufficient, under all of the circumstances, to overcome the considerations hereinbefore stated. From the record it is manifest that in the period of four or five years immediately preceding the Brown patents there had come to be an unusual and widespread interest in the matter of electric heating. The invention of nichrome wire solved the problem of a dependable and efficient element, but the right to its use was involved in litigation, which [26] was not finally concluded until about the time of the Brown patents. With this question out of the way, heaters began to be put on the market in increasing numbers, and doubtless by means of advertising and the arts of salesmanship, the desire for such heaters was greatly stimulated. In this work the plaintiff was active, but undoubtedly it was to some extent also the beneficiary of the activities of its competitors. It may be conceded that its No. 7 heater was in some degree more efficient than its earlier devices, and was more attractive in

appearance, but, as already pointed out, its attractiveness was due not so much to slight changes in form as to increase in size and more particularly a substitution of the warm copper bowl with suitable trim in the place of the nickel type of heater. Furthermore, in the changes of social and housing conditions and in the rapidly growing tendency to use electrical energy for divers purposes in the home, may doubtless be found contributing causes for the increased demand. But whatever may be the full explanation, such popularity as heater No. 7 may have had and may now have cannot reasonably be attributed merely to the slight change in the contour of the reflector or the addition of the broad annular flange, or to both of these changes.

It is urged that in a measure the present design suits are ruled by the judgments recently procured by the plaintiff in this court against other parties, in actions at law for infringement of the same patents. The causes were tried with a jury, resulting in nominal verdicts for the plaintiff, and while they were pending upon writ of error in the Circuit Court of Appeals the parties made some adjustment, the nature of which is not disclosed, and accordingly, by agreement, the writs were dismissed. Just what effect should be given to the judgments under such circumstances is not entirely clear. It is, of course, not contended that they constitute a judicial estoppel. The judge who presided at the trial, it is true, must have entertained the view that the evidence was sufficient to go to the jury, but there is nothing in the records to indicate [27] what his conclusion

would have been had he been called upon independently to decide the entire issue. I find no difficulty in accepting his views of the law as set forth in his charge; but while it is to be conceded that uniformity of decision in the same tribunal is highly desirable, and to that end, in the case of a doubtful issue, one judicial agency may with propriety defer to a precedent established by another of the same dignity, I am unable to say that here I entertain such doubt as would warrant me in subordinating my own judgment to that of the jury in the other cases, even if it be assumed that the evidence is substantially the same.

There being no controversy touching such general principles of patent law as are involved, I have thought it unnecessary to add to the length of the opinion by stating them. Nor would it serve any useful purpose to review the cited cases. Altogether they are of course, helpful, but no single one can be regarded as a controlling or even highly persuasive precedent upon the real issue, which is comparatively narrow, and more largely one of fact than of law.

For the reason stated, the bills must be dismissed, and such will be the decree in each case, with costs.

[Endorsed]: Filed Oct. 4, 1920. Walter B. Mal-
ing, Clerk. [28]

(Title of Court and Cause.)

Decree.

This cause came on to be heard before the Honorable FRANK S. DIETRICH, United States District

Judge, at the July 1920 Term of court, on the 25th day of August, 1920, and thereupon was thereafter tried from day to day until and including the second day of September, 1920, upon the introduction of evidence oral and documentary, by each party hereto, and upon the argument of counsel; and thereupon after consideration thereof it was, on the 4th day of September, 1920, ORDERED that the bill of complaint be dismissed with costs to defendant, and that a decree be signed, filed and entered accordingly.

NOW, THEREFORE, it is hereby ADJUDGED AND DECREED that said bill of complaint be and the same is hereby dismissed, with costs to defendant to be taxed.

Dated: Nov. 1, 1920.

R. S. BEAN,
United States District Judge.

[Endorsed]: Filed and entered November 1, 1920.
Walter B. Maling, Clerk. [29]

In the United States District Court for the Northern
District of California, Second Division.

No. 493.

MAJESTIC ELECTRIC DEVELOPMENT COM-
PANY,

Plaintiff,

vs.

WESTINGHOUSE ELECTRIC & MANUFAC-
TURING COMPANY,

Defendant.

Stipulation in Re Statement of Evidence on Appeal.

IT IS STIPULATED AND AGREED by and between the parties to the above-entitled suit, that the annexed statement of evidence on appeal is true, complete and properly prepared, and that, under Federal Equity Rule 75, the same may be approved by the Honorable MAURICE T. DOOLING, Judge of and holding Court in the District Court of the United States for the Northern District of California.

Dated: December 16th, 1920.

JOHN H. MILLER,

Attorney for Plaintiff.

WESLEY G. CARR,

DAVID L. LEVY,

WALTER SHELTON,

Attorneys for Defendant.

IT IS ORDERED that the annexed statement of evidence in the above-entitled suit be and the same is hereby approved.

M. T. DOOLING,

Judge of the United States District Court for the
Northern District of California.

Dated: December 17, 1920. [30]

In the Southern Division of the United States District Court for the Northern District of California, Second Division.

No. 493.

MAJESTIC ELECTRIC DEVELOPMENT COMPANY,

Plaintiff,

vs.

WESTINGHOUSE ELECTRIC & MFG. CO.,
Defendant.

**Statement of the Evidence Under Equity Rule 75 for
the Purposes of Appeal**

This case came on for trial on August 26th, 1920, in the above-entitled court at the City and County of San Francisco, State of California, before Honorable FRANK S. DIETRICH, United States Judge for the District of Idaho, John H. Miller, Esq., appearing as attorney for plaintiff, and Wesley G. Carr, Esq., and David L. Levy, Esq., as attorneys for defendant.

John H. Miller made the opening statement on behalf of plaintiff, and Wesley G. Carr made the statement on behalf of the defendant, and thereupon the following proceedings were had.

Plaintiff offered in evidence original United States Patent, No. 1,245,084, dated October 30, 1917, issued to Majestic Electric Development Company as the assignee of Edmund N. Brown upon an application filed July 10, 1917, and the same was marked "Plaintiff's Exhibit 1."

Plaintiff also offered in evidence an electric heating device as illustrative of the patent in suit, and the same consisted of the Brown No. 7 heater, which had been offered in the previous case, No. 492, between the same parties, and the same was marked "Plaintiff's Exhibit No. 2." [31]

Plaintiff also offered in evidence an electric heating device which had been produced and put in evidence in the prior case, No. 492, between the same parties, and the same was marked "Plaintiff's Exhibit No. 3."

Plaintiff also offered in evidence an electric heating device which had been produced and put in evidence in the prior case, No. 492, between the same parties, and the same was marked "Plaintiff's Exhibit 4."

Plaintiff also offered in evidence an electric heating device which had been produced and put in evidence in the prior case, No. 492, between the same parties, and the same was marked "Plaintiff's Exhibit 5," said devise being there described as a Westinghouse heater.

It was stipulated that the following testimony of the witness Edmund N. Brown, Milton H. Shoenberg and J. R. Hiller which had been taken in the prior case, No. 492, between the same parties, should be received in evidence herein with the same force and effect as if originally taken herein.

Testimony of Edmund N. Brown, for Plaintiff.

I am 43 years of age and I reside at San Francisco; I am the president of the Majestic Electric

(Testimony of Edmund N. Brown.)

Development Company, plaintiff in this suit. Its place of business is at 656 Howard Street, San Francisco, California, and consists in manufacturing Majestic Electric Heaters and Majestic appliances. I am the Edmund N. Brown referred to in the patent in suit, and I herewith produce one of the samples of the device referred to in that patent and marketed by the plaintiff. The tag attached to said device shows that it was offered in evidence by the plaintiff in a prior suit in this court of the Majestic Electric Development Company vs. Holabird Electrical Company, No. 16,100, where it was marked "Plaintiff's Exhibit No. 2." Thereupon the said device was offered and received in evidence and marked [32] "Plaintiff's Exhibit No. 2, Brown Patented Device," which said device is hereby referred to and by such reference made a part hereof.

(The witness continues:) My company, plaintiff, has placed these devices upon the market in a commercial way. The trade name I gave to this article which has been put in evidence as "Plaintiff's Exhibit No. 2" is "No. 7," and that is the name by which we sell it and by which it is generally known. The first commercial sale of that device was made by us in October, 1916, to Holbrook, Merrill & Stetson, in Los Angeles, California, and almost simultaneously to Harper & Reynolds of Los Angeles. We sold 500 of the devices to each of said firms; the devices so sold were the same as the model here "Plaintiff's Exhibit No. 2." The Boesch Lamp

(Testimony of Edmund N. Brown.)

Company of San Francisco manufactured the various parts of these devices for us with the exception of the electrical parts. We made the electrical parts and assembled the devices. Prior to this sale and shipment in October, 1916, I had made up a sample of the device in the early part of 1916, and I have an invoice under date of April 4, 1916, showing the same. The device so made at that time was identical with exhibit No. 2 except that it had a blue finish instead of a red finish, that is to say, the back of the heater, the base and the stem were colored blue, whereas those portions of exhibit 2 are colored red. With that exception the device made up by me in April, 1916, was identical with exhibit 2. I went East in April, 1916, first going to Canada, afterwards to New York and Philadelphia. I took the heater which I made in April, 1916, with me and showed it to people to figure on its cost of manufacture. I went to several people with that idea and got prices from them as to what they would charge to manufacture the device. The headquarters were in New York, and we opened a plant in Philadelphia that year. I was east on that trip about four months. I first went to Canada and showed the device up there, then I went back to [33] New York and showed the machine where I solicited bids for the cost of manufacture. I then went to Philadelphia for the purpose of opening up a plant there and subsequently made arrangements to open up said plant, and did open up the same and it has been operating to this day. We manufactured these

(Testimony of Edmund N. Brown.)

heaters there and sold them all over the Eastern territory and foreign countries, I returned to San Francisco in August, 1916, and immediately arranged with the Boesch Lamp Company for dies to be made so that we could manufacture these heaters in quantities; the Boesch Company has continued to make them ever since for us, and they make them for us now. The devices which we sent to Los Angeles in October, 1916, gave general satisfaction so far as I could see, and after that we made and sold them during the remainder of the year. Our first order to the Boesch Lamp Company was for 5,000 and we made 2,000 in addition thereto. During the remainder of the year 1916 we made and sold some 7,000 or 8,000 of the devices covering the entire territory of the United States and foreign countries. We continued to manufacture them in 1917, 1918, 1919 and 1920, and have been manufacturing them ever since. During that period I should say roughly speaking, we have sold in the neighborhood of 350,000 or 400,000; that is an approximation. We also manufactured some at Philadelphia. We also had an office in Kansas City. Plaintiff is now manufacturing them both at Philadelphia and San Francisco. After the sale of the first thousand in October, 1916, the demand increased very much, and the business is now a large one extending generally over the world, you might say. We send them into practically every foreign country, China, Japan, New Zealand, Australia, Spain, France, Great Brit-

(Testimony of Edmund N. Brown.)

ain, Italy, Denmark and South American countries—practically all countries.

I am familiar with the former suits which were brought in this court by the Majestic Electric Development Company against the Holabird Electrical Company and Hale Brothers, Inc., with reference to infringement of this patent, and am familiar [34] with the devices which were used in that case and testified to as being and decided as being infringements of the patent in suit, and can pick out the same from the exhibits now present. (Here the witness picks out from the exhibits before him and used in the said identified cases two exhibits and the same were thereupon offered in evidence and marked respectively "Plaintiff's Exhibit No. 3" and "Plaintiff's Exhibit No. 4.")

I am familiar with the device put on the market by the Westinghouse Electric & Manufacturing Company, defendant herein. I think it was in 1918 that I saw the first one. I have one of those devices here which was put in evidence in the prior litigation and marked "Plaintiff's Exhibit No. 17, Westinghouse," and I here produce it. (Such exhibit was then offered and received in evidence and marked "Plaintiff's Exhibit No. 5, Westinghouse Device.")

I have seen the Westinghouse device on sale in various stores in different parts of the country.

(The witness continued:) When we commenced to sell our No. 7 heaters, the price was \$7.50, and the present price is \$11. After the issuance of the pat-

(Testimony of Edmund N. Brown.)

ent in suit we marked our No. 7 heaters with the date and number of the patent.

Cross-examination of the Witness BROWN.

On cross-examination, the witness Brown testified as follows: The price of our No. 7 heater is determined by two factors; one is the license agreement with the Hoskins Company the patentees of the resistance wire which we use, who placed a minimum charge on heaters of this type, and the second is the cost of manufacture. Our company has a license from the Hoskins Company under the Marsh patent for the alloy wire. We do not use nichrome; we use what is manufactured by Hoskins and called chromel A. Nickel chrome alloy would be more correct. [35] We have been operating under license from that company for the Marsh patent I think since the fall of 1916. It was on my eastern trip in 1916 that we were granted a license.

Our recent No. 7 heaters are provided with a name plate bearing the date "Patented September 1, 1914." That refers to patent No. 1,109,551 granted to Majestic Electric Development Company on an application filed by Milton H. Shoenberg bearing this date, September 1, 1914.

Redirect Examination of Witness E. N. BROWN.

On redirect examination said witness testified as follows:

Regarding the license under what has been denominated as the Marsh patent, that refers to this resistance wire which is wrapped around this coil

(Testimony of Edmund N. Brown.)

which we purchased from the Hoskins Manufacturing Company, which company controlled a patent for alloyed wire. It is just the wire itself that is covered by the patent and not the device itself. It is the alloy from which they make this particular kind of wire that is acted upon by electricity in the most advantageous way, whereas a different kind of wire, it seems, would not answer the purpose. The patent covers the alloy. The same resistance wire is used on toasters and in irons, and other electrical devices.

Testimony of Milton H. Shoenberg, for Plaintiff.

MILTON H. SHOENBERG, being duly called as a witness on behalf of plaintiff, testified as follows:

I reside in San Francisco and am 45 years of age. I am associated with the Majestic Electric Development Company whose place of business is 656 Howard Street, San Francisco. I am familiar with plaintiff's heater No. 7 represented by "Plaintiff's Exhibit No. 2." The plaintiff has put that device on the market. They began some time in 1916. I became actively associated with the company in 1917. I remember Mr. Brown going East in 1916. Before he went East I saw the heater which he [36] had and which he took east with him, as testified to by him. After I became associated with the company in 1917, they continued the sale of the No. 7 heaters. I could not say as to the number of heaters sold, because I am not in the sales depart-

(Testimony of Milton H. Shoenberg.)

ment. I am the superintendent, but I do know that there have been extensive sales for these No. 7 heaters extending over the entire world.

Testimony of J. R. Hiller, for Plaintiff.

J. R. HILLER, being called as a witness and duly sworn, testified on behalf of plaintiff as follows:

I have resided at San Francisco, California, about 22 years, and am manager of the Boesch Lamp Company, a corporation located at San Francisco. I am familiar with the Brown heater, known as No. 7, and we have manufactured a portion of these heaters for the Majestic Electric Development Company and for Mr. Brown. We have manufactured a great many for them, I should judge between 100,000 and 200,000. The first one we made was in April, 1916. I have with me the invoice showing the date of April 4, 1916, and I can verify that date from our books. That heater did not differ from Plaintiff's Exhibit 2, except as to a different colored enamel. That portion of Exhibit No. 2 which is of a red tint was enameled blue in the heater referred to; that was the only difference. Mr. Brown went east directly after April 4, 1916, and returned some time about July or August of that year. He sent for me to talk over the production of this heater in quantities and asked estimates as to costs. I gave him estimates, and the result was an arrangement between the two companies for the manufacture of these heaters in quantities. We started in

(Testimony of J. H. Hiller.)

to manufacture an order for 5,000. Of course we had to make tools and it took us a month or two to get those tools into use, but before we had the 5,000 delivered we had other orders. The quantity ran considerably [37] over what we estimated. We manufactured and delivered the first order for 5,000 and after that we delivered 10,000, and continued on up to the present time. We are making and delivering them up to date.

It was admitted by counsel for defendant that defendant had manufactured and sold since the date of the patent the device shown and illustrated by Plaintiff Exhibit 5.

It was also admitted that on July 29, 1919, plaintiff had notified defendant that in its opinion said heater, Plaintiff's Exhibit No. 5, was an infringement of the patent in suit, and requested a discontinuance thereof, and that defendants had denied the charge of infringement and declined to discontinue the sale of said device, and at the time of the commencement of the suit was continuing such sale.

Thereupon plaintiff called as a witness GEO. J. HENRY, who, having been duly sworn, testified as follows:

Testimony of George J. Henry, for Plaintiff.

I have already testified as an expert in the case No. 492, just preceding this one. I have examined the patent in suit, No. 1,245,084, dated October 30, 1917.

The subject of the patent is an electric heater,

(Testimony of George J. Henry.)

and is of the type that is generally called a beam or radiant beam heater. It involves the employment of a source of heat located within a surface upon which the heat rays or radiant rays falling are reflected outwardly in a beam of greater or less divergence. It is a device, ordinarily, of a portable nature, which involves handling, and as the interior part, particularly the heating element, is one which gets very hot, it is necessary to insure the other portions with which one comes in contact against a burning temperature, either for injuring a person or from inflammability of draperies, or anything [38] that may come in contact with it. It also implies a protective device across the path of the issuing beam, to prevent anything coming in contact with the heating element, which would undoubtedly burn or set on fire anything that came close to it. It must have a base, some form of standard to support the several elements that go to constitute the heater. The most important element, if relative importance is permissible, outside of the heating unit itself or resistance wire, is probably the reflector. The reflector in this patent is a concavo-convex type of reflector, within which the heat unit is located at substantially about the focus or focal axis, the radiant energy being received on the surface of that reflector, issues outward, according to well-known law of reflected beams that the angle of incidence is equal to the angle of reflection. The outer portions of the reflector, especially in the smaller sizes, it is more necessary to employ a pro-

(Testimony of George J. Henry.)

TECTIVE flange or border from the hot reflector, and from the impact, particularly, if the heat rays. I wish to be understood in employing the term "heat rays," that I do so as a concession to common parlance. The energy from this device is really a radiant energy, which is not heat, and does not become heat except upon its impact upon some absorbing medium, as the skin. There is no direct heat, theoretically, transferred from the resistance unit; it is radiant energy, just the same as a beam of sunlight is radiant energy until it strikes the earth, or your body, and then is transformed into heat, or at least we have the sensation from the impact of the radiant beam, which we call heat; it travels at a high rate of speed, the same as light, and is to be carefully distinguished from heat by convection or conduction. The radiant energy emanating from the resistance wire or heat unit within the reflector strikes all portions of the reflector, and is reflected outwardly according to the curvature of the part of the reflector on which they impinge. The outer margin of the reflector is [39] advantageously turned away, or at such an angle as will prevent the impinging of the said radiant energy, and is therefore not heated as greatly as would be the inner portion. The invention of the patent before me involves such a protective flange. The form of reflector is described as that of a concavo-convex shape, which is well known in the art to mean concave on one side and convex on the other, as applied most frequently to lenses. The concavo-convex reflector is shown by the nu-

(Testimony of George J. Henry.)

meral 1. It is particularly observable in Figure 2. The protection of the outer edges, as I have previously stated, from contact with the hand or the body is more important in the smaller sizes than in the larger ones, because of the greater proximity to the heat unit, itself. The protective features, the annular flange and guard wire also become more important as the size of the heat units or the energy of consumption is increased. The outer portion of the reflector in most of the curves that we find in the art for these reflectors, does not receive a great amount of radiant energy upon it, nor does it reflect as great an amount of radiant energy as that which is received in the more inner portions of the reflector. Various curves may be used for the reflector shape, the important point being the adoption of a curve which will throw out a beam of radiant energy. The beam in all of these heaters is more or less divergent, spreading slightly as it emanates from the reflector. At a distance of 9 to 15 feet, you can instantly feel the heat if the beam is turned upon one or if one walks in front of the heater, as, for example, on the sidewalk, even though the heater may be well inside of the store, or behind a glass window, you can feel the radiant beam; of course, you cannot feel it as readily behind a glass window, but it is there, and you can sense it if you are looking for it. [40] The invention set forth in the patent before me involves, as I say, the several elements, the heat element, primarily, or heat unit, that being an electrical resistance in this case,

(Testimony of George J. Henry.)

the reflector, the protective margin, and the wire front or guard frame as the principal elements.

Taking up the several parts illustrated in the drawings, we find a concavo-convex reflector illustrated by the numeral 1. Beyond the concavo-convex portion of this reflector we find an extension flange, 3a. Across from the outer margins of this flange we find a wire cage or guard wires extending in arched form; the wire cage or guard is hinged as at 26 in Figure 2, whereby it may be swung outwardly, which is obviously for the purpose of getting to the heat unit so that other heat units may be substituted or repairs made therein. The entire device is carried on a standard 4, having a suitable base and electrical connections are made from the cord as 18, Figure 2, to the resistance wire or coil as indicated at 6, 7, 8, of Figure 3. A handle is fitted to the back so as to readily move the device from one place to another. In the particular structure shown, the annular flange, 3a of figure 2 is shown as extending outwardly a considerable distance from the reflector, numeral 1, the heater being of relatively a small size. There is a secondary element or back portion curved, shown at 3, which provides an air space between 1 and 3, in order to prevent the hot portions of the reflector being exposed.

Q. It is stated in the patent that the heating unit is supported substantially at the focus of the reflector. Just briefly state the necessity or desirability of locating the heating unit in that position.

A. The heating element must be located at such a

(Testimony of George J. Henry.)

position that lines or rays of radiant energy emanating from the heating unit striking upon the surface of the reflector will be reflected outwardly in a beam of more [41] or less divergence. That implies a location of the source or radiant energy at or about the focus of the concavo-convex curve. As has been previously stated, it is impossible in practice to make the source of your radiant energy a point, and for that reason the resistance coil is made as small as practically can be made, and is located about the focus, or as approximately near the focus as possible. The result of it being larger than the focal point results in a divergence somewhat of the beam on each side of the limits that it would follow if the beam emanated from the focus as a true point. Mathematically, of any regular curve the focus would be a point, but in these reflectors there is rather an axis on which there are a series of focal points for different portions of the reflector, as a rule. That is, the reflector can very properly have several foci centered along on the axis of the heat element; the heat element should surround the range within which the several foci would fall, or it should be centered around the focus in order to give the best resulting beam, and such is the case in the invention of the patent before me.

Q. The patent also mentions an annular member extending outwardly from the margin of said reflector. How is that designated in the drawings?

A. It is designated in the drawings as 3a. It could just as well be a portion of the metal in which

(Testimony of George J. Henry.)

the reflector is formed. There is a portion of the reflector, numeral 1, which is turned over in Figure 1, and which extends beyond the margin of the reflector, and that, together with the annular base around it, forms the said annular flange, 3a.

Q. The patent also says, "In order to prevent the outer exposed edge of the heater from being heated, I provide the casing with a marginal annular flange 3a." A. Yes.

Q. In what way does that protect the outer exposed edge of the heater from being heated?

A. In that it does not receive any [42] of the radiant energy from the heat unit. It is beyond the range of the rays, which rays are intercepted by the reflector—the surface of the reflector or the edges of the reflector cut off the rays so that they do not strike the margin, 3a. The reflector is heated very largely by the impact of radiant energy thereon, most of which, or a large portion of which, it reflects. It is also heated by conduction of air current from the element 7, which air rising strikes the reflector surface, and heating it in that way by convection, but a very large portion of its heat is through the impact of the radiant energy on the surface of the reflector. If, now, we intercept those rays before they strike the marginal portion, as we do in the invention of the patent before me, we prevent the breaking up of that radiant energy on the annular margin, and it remains cooled in other portions of the heater. It is true that it receives some heat by conduction from the body of the re-

(Testimony of George J. Henry.)

flector, but it does not receive the added increment from the radiant ray, and therefore, remains sufficiently cool to be an adequate protection against damage.

Q. The patent also mentions a protective cage having guard wires arched between opposite sides of said annular member. What significance has that device?

A. That is to protect the clothing or drapery, or any outside article from coming in contact with the highly-heated portion at the center.

Q. The patent also refers to the fact that these arched guard wires are hinged to said annular member, so that it may be swung outwardly, from the reflector. What is the object of that?

A. That is merely to hold the parts together, to simplify somewhat the operation, and to insure the proper protection of the heat portion after the cage has been opened up or the guard wires have been opened up for the purpose of changing or repair the heat elements, or for any purpose, of securing access to the center, and the wire guard is again placed in [43] position. The hinge enables this to be done a little more readily.

Q. Please take the No. 7 Brown heater in evidence and just illustrate how the guard wires can be swung outwardly on a hinge.

A. Yes. It can be swung out like this.

Q. How is that hinge formed?

A. The hinge is formed through the upper flange, so that it may be taken apart entirely; there are

(Testimony of George J. Henry.)

two holes in the outer portion of the annular flange in which two of the wires of the protective cage may be engaged or may be entirely disengaged if it is desired.

Comparing Plaintiff's Exhibits 2 and 5, I find in each a heating element or electrical resistance wire formed on a heat resistance insulated core of substantially the same dimensions in each heater, and of substantially the same electrical resistance within, probably, 10 per cent, as regards the resistance; and within a very few per cent, as regards dimensions. In both heaters, said element is located about the focus or foci, if there is more than one curve to the reflectors, which I do not believe to be the case. The reflector in exhibit 5 is of larger dimensions; that is, it is larger in its circular diameter and in its depth than is that of exhibit 2. The annular flange extending beyond the reflector is smaller in exhibit 5 than it is in exhibit 2. The guard wires protecting the heater in each instance of these exhibits are slightly different in curvature, but substantially the same as regards distance from the heat element, and protection provided from the said heat element. There appears to be a difference in the curvature of the reflectors, exhibit 5 appearing to be a segment of a circle of $7\frac{1}{2}$ or 8 inches radius, and exhibit 2 appearing to be that of a parabole. Both of them are concavo-convex reflectors of a polished copper surface, either made of sheet copper or other metal copper plated. Both are mounted upon [44] a base and standards, exhibit

(Testimony of George J. Henry.)

5 being mounted to a swivel, so that the beam directed therefrom may be varied in angular elevation, whereas that of exhibit 2 is fixed, and, therefore, the beam being directed upward at an angle of possibly 20 degrees. The wire guards in both of these heaters are formed around a circular frame or ring, and that in exhibit 2 is connected to the outer portion of the annular flange by having two of these wires bent over and having one of the wires arranged at the bottom of the cage to lock it with said annular flange, whereas in the case of exhibit 5 three of the guard wires are extended out a short distance, and connect with the annular flange by being sprung into holes therein in the same manner that one of the wires in exhibit 2 springs into the hole. A comparison in the manner of fastening the guards in the two exhibits discloses three points of holding in each, consisting of three of the guard wires extended beyond the annular ring to which they are fixed. Two of those wires in exhibit 2 are bent to engage the cage or guard wires at all times with the annular ring, whereas in exhibit 5, while it may be freely swung about one of these guard wires, it may also be removed, the loop on the guard wire of exhibit 2 having been cut off or not formed in the case of one of the guard wires in exhibit 5.

A noticeable difference appears between these two heaters in the manner of locating the heating unit. While in both of them it is about the focus or foci of the reflectors, and therefore, performs

(Testimony of George J. Henry.)

substantially the same function, or does perform the same function, but in a slightly different way, and to a slightly different degree in the two of them, the outer appearance of the location of the heating unit, because of its location, is materially different. In case of exhibit 5, the beam which is thrown out at any point in its [45] cross section will be substantially circular and of equal intensity at the same distance, and direction from the axis of the reflector curvature, whereas in exhibit 2, due to the manner in which the heat element is placed transversely with respect to the axis of the reflector, but, nevertheless, enclosing or containing within itself the focus of the reflector, its beam will be laterally divergent or spread out sideways more than in the case of the beam from exhibit 5. The result is that it will heat to the same degree of intensity a wider space. For example, it would undoubtedly cover the width occupied by two parties at a point 10 feet, for instance, with the same intensity that the beam from exhibit 5 would heat one individual; not that there is more heat emanating from it, although it does indicate that there is a slightly greater intensity to the beam, but that the beam is spread sideways and flattened in a vertical direction as compared with exhibit 5, which will throw a circular beam, or a conical-shaped beam. If we picture such a conical beam at a distance of ten or fifteen feet from the heater, and then suppose that to be elastic and flattened with your hand at the top and bottom, it would naturally spread out sideways

(Testimony of George J. Henry.)

without requiring any more radiant energy from the heater. That is what is attained by the location of the heat element on a line transverse to the reflector axis. The electrical connections to the heat unit are in the case of exhibit 2 through two holes in the back of the reflector, one for each of the conductors, each conductor passing through its corresponding hole, and being insulated therefrom substantially, if not exactly, in the manner shown in Figure 4 of the patent in suit; whereas in the case of exhibit 5, the back of the reflector is punctured with a hole of considerable size, which hole is flanged over, and insulation means are passed through the hole and retained against the flange, and [46] between the flange, the loose thimble piece previously testified to, forming one of these flanges, and the insulation base has imbedded or fixed therein the two conductors which are connected with the terminals of the resistance wire of the heater unit. I have examined the curvature of a machine like exhibit 5 to determine what kind of a geometric curve that is. The curve is that of a circle of $7\frac{3}{4}$ inches radius, possibly 8. The curvature of the reflector in Plaintiff's Exhibit 2 is a parabola. Both of them are concavo-convex reflectors, and both perform the same functions in substantially the same way. As to the mounting of the elements, in exhibit 5, it is mounted axially, whereas in exhibit 2 it is mounted transversely, but that difference in mounting has affected no difference whatever in the mode of operation of the

(Testimony of George J. Henry.)

device, the heater unit being about the focus in each case.

Q. Would it be proper to speak of a curve such as shown in exhibit 5, having a focus?

A. Well, it is in the sense that we are here discussing radiant energy emanating from the heat unit, the focus in that case not being the center of curvature; it is probably much more correct to speak of the direction which a radiant beam will take when reflected from the curved surface and originating at the heat element in each case; considering it from that point of view, I might say that if the heater element in exhibit 5 were reduced to a length of not to exceed one inch and a diameter of not to exceed probably 3/16ths or a quarter of an inch, which is impossible with the means available for such a construction at the present time, you would then get a very regular and quite satisfactory parallel beam from the heater, exhibit 5; it would probably be necessary to obtain an equivalent beam from heater 2, to employ a heater element about one-half inch long and one-half inch in diameter; but if we could get down to those small dimensions in those two heaters, we would get a very well-defined beam; as it is, we approximate that as [47] closely as we can practically. The resistance wire necessary to secure the requisite expenditure of energy or the development of the radiant energy that we want in these heaters must be of material dimensions, and the heater unit in both of these exhibits has to be as small as can be

(Testimony of George J. Henry.)

commercially made, with such limitations, and given a heating element of this size, the beam which results from the reflectors in these two cases is very distinctly directed in an axial direction; it has a greater intensity at some points with one heater than with the other. It is wider in the case of the beam from exhibit 2 than exhibit 5, although it does not extend to as great an elevation or height in the case of exhibit 2 as it does in the case of exhibit 5. Its intensity on the axial line is greater in exhibit 2 than in exhibit 5, and it also spreads a little greater. On the two heaters similar to exhibits 2 and 5 which I examined, the watt consumption was about 10 per cent greater in exhibit 2 than in exhibit 5. Both heaters throw very decided and well-defined beams tapering off on their edges or borders to rapidly reducing temperatures. When I say "temperature" again, I wish to be understood as referring to the sensation of temperature on the body, or thermometer, or by radiometer, not to actual heat, because heat is the result, always, of the impact of the radiant energy as previously described.

Q. Have you tested out these heaters in actual practice for the purpose of noting their mode of operation and the results produced?

A. I have tested out duplicates of them, substantial duplicates of these, about the same as regards all intents and purposes to these; a slightly different structure as to the manner of attaching the heating element through the reflector, in the one which I previously examined.

(Testimony of George J. Henry.)

Q. What did you find from those tests as to the results produced by the two devices and the similarity of mode of operation by which that result was produced?

A. They both produced [48] substantially the same result in substantially the same manner, by substantially the same means. In each instance you have the heat element in the reflector and the beam created thereby, and the beam is one which develops instantly the sensation of heat when you pass in front of it; the angle at which the heater of exhibit 5 is usually seen in windows is adjusted to practically the same degree of the permanent adjustment of exhibit 2. The heating elements themselves are almost exactly duplicates of each other in appearance and function.

Q. Referring now to exhibit 2, the patent speaks of an annular member extending outwardly from the margin of the reflector, and "in order to prevent the outer exposed edge of the heater from being heated I provide a casing with a marginal annular flange 3a." Just explain from the model how that annular flange is protected from being heated to the same extent as the rest of it?

A. If we think of the radiant energy coming from the heater unit located within the reflector in these two exhibits as being light, it is seen at once that the annular flange in both exhibits would fall in shadow; it would not receive the impact of the light rays emanating from the heat unit, and, therefore, it does not receive the impact of the

(Testimony of George J. Henry.)

radiant rays; it does not get as hot as the other portions of the reflector. Of course, in both cases the heat is conducted by the metal itself to the outer edges to the same extent, but the whole object of the annular flange is to prevent contact with excessively hot portions, and the flange in both of these heaters is in the shadow of the radiant rays and is not heated to such a degree as to burn one or occasion any great inconvenience.

Q. How does radiant energy heat a body or object?

A. We do not know exactly how it does it, but we know it does it. When a wave of radiant energy strikes a material [49] mass it heats it just exactly like the sunshine heats the railroad track a good deal hotter than the ground around.

Q. You mean that the radiant energy must strike the body?

A. That is the theory, that the waves of radiant energy strike the body, yes.

Q. In the case of the plaintiff's reflector, is that the way the reflector part is heated?

A. That is the way the reflector part is heated; also it would receive some heat by air currents.

Q. We will eliminate those.

A. Eliminating air currents, that is the way it is heated.

Q. That is the radiant energy proceeding from the element strikes or impacts against the reflector, itself. Is that correct? A. That is correct.

Q. And then that reflector causes the radiant

(Testimony of George J. Henry.)

energy to be reflected outwardly at the same angle at which it is received?

A. Yes, but the energy which is reflected out is not the energy which has done the heating. The heat is the deficiency of reflection. If you had a perfect reflector, it would not get hot; that portion of the rays or percentage of the rays which is broken up and lost results in heat in the reflector, and that part which is reflected heats other objects.

Q. In other words, you cannot reflect the entire radiant beam that comes from the element because some of it is, you might say, absorbed by the reflector? A. That is correct.

Q. That heats the reflector?

A. That is correct.

Q. In the case of the annular marginal flange, 3a, in plaintiff's device, does that receive the impact of the radiant energy from the element?

A. It does not in either of the exhibits before me.

Q. It is arranged mechanically so that the rays will not strike it. Is that the idea?

A. Yes, that is correct.

Q. In other words, there is no impacting of radiant energy [50] upon that flange?

A. That is correct.

Q. And, therefore, that flange is less heated than the reflector, itself? A. That is correct.

Q. You have tested that out in practice to see if that is correct?

A. I have. I can show you that experimentally here in about two minutes, I think.

(Testimony of George J. Henry.)

Q. We will defer that till later. Now, take the Westinghouse heater, Plaintiff's Exhibit 5, and state what, if anything, you find there corresponding to that marginal annular member, 3a of plaintiff's device.

A. I find a flange turned over at a material width, probably 7/8ths of an inch of the copper reflector turned over, forming a curved rim.

Q. In the case of the plaintiff's device, the flange is flat, I assume.

A. The flange is turned over on two flats, and then a second flange is extended out about 1 $\frac{1}{4}$ or 1 $\frac{1}{2}$ inches.

Q. You call that whole thing the annular member?

A. I do. All of that annular portion beyond the reflector surface is unquestionably the annular member.

Q. In plaintiff's device, the reflector, proper, is turned over, and then is supplemented by the flat portion, 3a? A. Yes.

Q. Now, in the case of the Westinghouse heater, do you find a marginal flange there?

A. Yes, I find a marginal flange made as a part of the reflector, itself, as a part of the reflector element, but not a portion of the reflector surface; it extends out beyond the reflector surface, and therefore, is not heated by the radiant energy.

Q. It is a curved flange?

A. It is curved over, yes; that is merely a detail of construction; either one would be equally as good,

(Testimony of George J. Henry.)

whether it were curved or flat.

Q. Now, do the rays emanating from the element strike or impact directly upon this curved flange in the defendant's device?

A. No—they may on the extreme—no, they do not at all.

Q. What is the result of that?

A. The result of that is a cooler portion of the reflector. [51]

Q. That is, the flange is the cooler portion of the reflector?

A. Is the cooler portion of the heater, although formed as an extension flange on the reflector.

Q. Does that prevent the outer exposed edge of the heater from being heated up? A. It does.

Q. Is that the same purpose that is accomplished by the plaintiff's corresponding device?

A. Exactly the same purpose.

Q. Have you tested this thing out in practice to see whether that flange in the defendant's machine is cooler than the other portions of the reflector?

A. I have.

Q. What did you find?

A. I found that it was cooler.

Q. Now, Mr. Henry, just take the Westinghouse heater there before you, and while I read some things here, I will ask you whether or not you find that or do not find that in the Westinghouse heater, or if not in the same form, in what form, if any. The first is, "An electric heater." Do you find in the Westinghouse heater an electrical heater?

(Testimony of George J. Henry.)

A. I do.

Q. "Comprising a concavo-convex reflector." Is that there? A. That is present.

Q. "A heating unit supported at substantially the focus of said reflector." Is that there?

A. That is there.

Q. "An annular member extending outwardly from the margin of said reflector"; is that there?

A. Yes.

Q. What does that annular member consist of?

A. It consists of a rolled-over or turned-over portion of the metal on which the reflector surface is formed.

Q. "And a protective cage having guard wires arched between opposite sides of said annular member." Do you find them. A. I do find them.

Q. In the Westinghouse device do you find a heater unit in the spaced relation to the concavo-convex reflector? [52] A. Yes, very clearly.

Q. State whether or not you find any device there corresponding to the aperture in the reflector having their margins bent to form flanges, insulating means upon either side of said flanges, and connecting devices extending through said insulating means and connected to the terminals of said heating unit?

A. I find a single aperture of relatively much larger size in exhibit 5 as compared with exhibit 2, through which I find a single insulating means in which is carried the two conductors, and which is retained in position by flanges or flange members

(Testimony of George J. Henry.)

holding the said insulating means to the said reflector, in exhibit 5.

Q. And in plaintiff's device I understand there are two of these apertures?

A. Two apertures, one for each conductor, in exhibit 2, as distinguished from two conductors in a single aperture in exhibit 5.

Q. And in defendant's device these have been consolidated into one aperture?

A. Into one large aperture.

Q. Is there any different result produced by that change in mechanical construction?

A. None, whatever.

Q. The two devices operate, then, in substantially the same way and give substantially the same result? A. They do.

The COURT.—Q. I want to ask a question. What is meant mechanically by the term "spaced relation"?

A. Well, the globe of that lamp is in spaced relation in respect to your desk, it is held away, it is not permitted to come in contact with it.

Q. It simply means it is not in contact?

A. It means it is retained at a distance from. You find it more in patent practice than you do in mechanics *per se.* [53]

Cross-examination of Mr. HENRY.

The use of the point of light or heat, if practically feasible and located at the focus of the parabolic reflector would project light and heat rays against that reflector which would be reflected in parallel

(Testimony of George J. Henry.)

lines. There is a parabolic focus in a spherical reflector, or the equivalent of it, in the sense that a parallel beam would be produced from a single point. If your source of heat were located at the center of a sphere of which the reflecting surface is a segment or part, the light rays would be reflected back to the center, back upon themselves. May I explain that a little further?

Q. I don't think that is necessary. If a heating unit could be concentrated at the focus in a parabolically-curved reflector, and that reflector were burnished—polished, to approximate perfection, would there be any substantial heating of that reflecting surface?

A. Yes, I think there would, for the reason that there is always some breaking up of the radiant rays. I don't care how frequently you polish that copper surface, it would still absorb some of the radiant energy and get materially hot. That becomes even more true after the heaters are old and become tarnished somewhat; the heat reflection is not as complete. As regards the matter of heating the reflector, if the heating element is symmetrically located with reference to the reflecting surface, broadly speaking, the more rays received upon the reflecting surface, or any unit of the reflecting surface, the hotter will that particular surface get, other things being equal. It follows that if you locate a heat unit in such a way that not as many of its rays will get to the reflector, then that reflector will not get as hot. If the heat unit be located so that the

(Testimony of George J. Henry.)

rays do reach the reflector, or more of them reach the reflector, it will get hotter. The heat is directly proportional to the impacting ray, other things being equal, [54] just exactly as it is with the impacting ray on your body from a distance. Whatever the reflector receives it takes its proportion of it, breaks it up and indicates heat. I might say that if some portions of your reflector received more of the rays than other portions, those portions of the reflector will get hotter. With a given quantity of energy over a given area, it is true that if there is less on certain portions than others, those portions would be less heated.

Referring to the patent in suit, I do not believe that the patentee specifies particularly what is the function of the turned-over edge of the reflector 1 shown in Figs. 2 and 5. It forms a part of the annular flange member for cooling, but I think its principal function is to make a mechanical joint of proper appearance with the extended portion, 3a.

Q. As a mechanical engineer, you doubtless know that it is usual and customary in sheet metal devices of this general character to turn over the edges to form a finishing bead?

A. A finishing bead is common in mechanical practice, yes, but I do not think your statement is literally true at all. The Simplex heater that we had here yesterday, and that came from England, I believe, does not show any such turned-over edges. The reflectors which the Westinghouse Company have introduced here as duplicates of the Simplex

(Testimony of George J. Henry.)

do not show it. The clamshell reflector, over there on the table, does not show it. I think it is quite common to leave an edge turned over. In sheet metal work, which you have mentioned, the commonest thing we find is a tin can, a yeast powder can; there is no beading on the top of a yeast powder can. Beading is common; I do not mean to dispute that statement, but it is not at all universal. It is usually for a specific purpose. For example, in this case, to prevent contact with the parts of the reflector. Beading, such as you speak of as being [55] common, I think you will find an example of it on the extreme outside edge of exhibit 2, the metal there is turned over. That turning over is very common. But turning over to any such degree as is shown in exhibit 5 is usually done for some definite purpose and for some other function than merely the finish of a metal edge.

The flange 3a of the patent in suit, is structurally a part of the outer casing 3, and has only a contact connection with relation to the reflector 1. That is true of the particular showings of the drawings of the patent in suit.

Q. Do you consider that it matters whether that is integral with the reflector, or is a separate part?

A. I should expect it to be slightly cooler if it were made separate, especially if there were a material air space between. Where there is intimate contact between the two parts, there would still be a material quantity of heat conveyed out on 3a. In the drawing, it is quite evident that there was no

(Testimony of George J. Henry.)

intent to leave any particular air space there, and, therefore, I don't see very much difference between 3a being made integral with 1 or being made separable from 1, although there would be a difference if it were made really separate and a space between them so that no conductivity from one to the other would exist. I think if 1 were a very hot member, that would be the construction adopted; but we are not dealing here with any red-hot structure, such as the center element; we are dealing with a thing that is heated beyond normal, and the idea is to get a sufficiently reduced temperature to make it convenient in handling it.

Q. Have you made any comparative test to determine whether there is any material difference in the degree of heating of the reflecting surfaces in Plaintiff's Exhibit 2 and Plaintiff's Exhibit 5?

A. Only the degree of putting my hands on them. [56] I have made other tests in regard to the emanating beam. But as regards the temperature of different parts of the heater, itself, it is only by the sensation experienced by putting my hand on the different parts.

Referring to certain devices manufactured prior to Plaintiff's Exhibit No. 2, and designated by the manufacturer as Nos. 1, 2, 2b and 3, I think that the turned-over edge of the reflector is what would be properly called a bead. I think it is not a flange in the sense of the patent in suit, in that it is not removed from the heat rays and therefore is not the purpose and does not function to protect the

(Testimony of George J. Henry.)

hand or exterior objects from the hot portions of the heater. Such a flange in any one of these structures would have to be a materially larger device. These would all get very hot. Its dimensions would have to be quite materially increased in order to protect from the heat. These are not efficient forms of reflectors; the reflectors themselves get very hot. The wire guard or cage in one or more of these, noticeably in the No. 2b and No. 3 is provided with projecting wire ends so as to engage with openings in the edge of the reflector, but not through an annular flange outside of the reflector surface. There is a small structural difference which I think is very material as to the facility with which the thing may be handled. The difficulty of getting the wires on and centered to the location of the ring by which the wires are joined inside the reflector edge makes it, I think, materially short of the advantages gained by the method illustrated in exhibit 5. Of course it is very old to put a wire through a hole in order to hold the wire, There is no particularly new feature in that. But the particular way in which these wires are bent and associate themselves with that rim in exhibit 5 is a material advantage over the several exhibits you last mentioned and have shown as being earlier [57] structures of the Majestic Company.

Regarding a device which was offered in evidence in the companion suit No. 492, as exhibit 8, I would regard the marginal portion of the reflector rather as a bead than a flange in the sense that we have

(Testimony of George J. Henry.)

been here discussing bead and flange. Why that was put there I cannot imagine except possibly for ornamental reasons. The man clearly did not have in mind the cooling of that outer edge. I think it would function only to a very, very minor degree as a cooling edge, as compared with that on exhibits 5 and 2. I recognize as a possible element of utility in this turned over edge of the defendant's heater the strengthening of the device to avoid bending in case it should fall and come in contact with some hard surface, but as to the assertion that it also tends to avoid to some extent the possible cutting of the hands of the people handling it and coming in contact violently with the edge if it were not so turned over, I cannot say that; on the contrary, the raw edge of the metal is more exposed to the hand than it would be if it were cut right at the end of the reflector and were not turned over at all, assuming, of course, the wire cage in position. It is a costly matter to put the flange on there. Whether their idea was to prevent cutting of the hands, or to stiffen the rim, I have no idea, but it costs money to put it on, if there is a definite reason for putting it there. That adds very materially to the cost of the reflector.

Thereupon plaintiff rested its *prima facie* case.

[58]

DEFENDANT'S CASE.

Defendant offered in evidence heaters Nos. 1, 2, 2b and 3, manufactured by plaintiff, which had been offered in evidence in the companion case, No.

492, and there marked as exhibits "A," "B," "C" and "D," respectively, and the same were similarly marked in the present case, that is to say:

No. 1 was marked "Defendant's Exhibit 'A,' "

No. 2 was marked "Defendant's Exhibit 'B,' "

No. 2b was marked "Defendant's Exhibit 'C,' "

and

No. 3 was marked "Defendant's Exhibit 'D.' "

Defendant also offered in evidence a photograph of the Majestic Company's exhibit at the Panama Pacific Exposition, and the same was marked "Defendant's Exhibit 'E.' "

Defendant then offered in evidence the following exhibits, marked as follows, to wit:

Copy of U. S. patent No. 881,017, issued to W. E. H. Morse on March 3, 1908, and the same was marked "Defendant's Exhibit 'F.' "

Copy of U. S. patent No. 1,194,168, issued to Albert J. Geiger, assignor to the Westinghouse Electric & Mfg. Co., on Aug. 8, 1916, and the same was marked "Defendant's Exhibit 'G.' "

Copy of English patent No. 119,971, application filed Sep. 4, 1913, and accepted September 4, 1914, by the Government of Great Britain to Simplex Conduits Limited.

Also a copy of U. S. patent No. 1,120,003, issued to A. A. Warner, assignor to Landers, Frary & Clark, on December 8, 1914, and the same was marked "Defendant's Exhibit 'H.' "

Also copy of U. S. letters patent No. 1,109,551, issued to Milton H. Shoenberg, assignor to Majestic Electric Development Company, on September 1,

1914, and the same was marked "Defendant's Exhibit 'I.' " [59]

Also a model as illustrative of the disclosure of the British patent, 19,971, application filed Sept. 4, 1913, and accepted September 4, 1914, to Simplex Conduits, Limited, and the same was marked "Defendant's Exhibit 'J.' "

Also a device designated as a painted reflector for the device of exhibit J and the same was marked "Defendant's Exhibit 'K.' "

Also a model asserted to be a reproduction of what is shown in the Warner patent, No. 1,120,003, and which was not made for sale or copied from anything which was made for sale, but simply made from what is shown in the patent as nearly as he could make it, and the same was marked "Defendant's Exhibit 'L.' "

Also a device produced and identified by witness Beam as made under and corresponding to the Geiger patent, No. 1,194,168, referred to as the clamshell heater, and the same was marked "Defendant's Exhibit 'M.' "

Also copy of U. S. patent, No. 668,459, issued to E. T. Porter on October 15, 1901, and the same was marked "Defendant's Exhibit 'N.' "

Defendant produced and offered in evidence page 79 of a printed publication entitled "The Electrical Times," dated January 25, 1912, published at London, England, and by stipulation of counsel it was agreed that the original should be withdrawn and a photographic copy thereof substituted therefor, which said photographic copy was then offered in

evidence and was marked "Defendant's Exhibit 1," the said being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence page 37 of a printed publication, entitled "The Electrical Times," dated January 11, 1912, published at London, England, and by stipulation of counsel it was agreed that the original should be withdrawn and a photographic copy thereof substituted therefor, [60] which said photographic copy was then offered in evidence and was marked "Defendant's Exhibit 2," the same being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence page 239 of a printed publication, entitled "The Electrical Times," dated March 7, 1912, published at London, England, and by stipulation of counsel it was agreed that the original should be withdrawn and a photographic copy thereof substituted therefor, which said photographic copy was then offered in evidence and was marked "Defendant's Exhibit 3," the same being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence page 362 of a printed publication, entitled "The Electrical Times," dated March 6, 1913, published at London, England, and by stipulation of counsel it was agreed that the original should be withdrawn and a photographic copy thereof substituted therefor, which said photographic copy was then offered in evidence and was marked "Defendant's Exhibit

4," the same being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence page 364 of a printed publication, entitled "The Electrical Times," dated March 6, 1913, published at London, England, and by stipulation of counsel it was agreed that the original be withdrawn and a photographic copy thereof substituted therefor, which said photographic copy was then offered in evidence and was marked "Defendant's Exhibit 5," the same being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence page 214 of a printed publication, entitled "Supplement to the Electrician," dated October 3, 1913, published at London, England, and by stipulation of counsel it was agreed that the original should be withdrawn and a photographic copy thereof substituted therefor, which said photographic copy was then offered in evidence and [61] was marked "Defendant's Exhibit 6," the same being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence page 353 of a printed publication, entitled "The Electrical Times," dated October 9, 1913, published at London, England, and by stipulation of counsel it was agreed that the original should be withdrawn and a photographic copy thereof substituted therefor, which said photographic copy was then offered in evidence and was marked "Defendant's Exhibit 7," the same being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence page 591 of a printed publication, entitled "The Electrical Times," dated December 4, 1913, published at London, England, and by stipulation of counsel it was agreed that the original should be withdrawn and a photographic copy thereof substituted therefor, which photographic copy was then offered in evidence and was marked "Defendant's Exhibit 8," the same being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence page 12 of a printed publication, entitled "Supplement to the Electrician," published at London, England, dated October 16, 1914, and by stipulation of counsel it was agreed that the original should be withdrawn and a photographic copy thereof substituted therefor, which said photographic copy was then offered in evidence and was marked "Defendant's Exhibit 9," the same being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence page 162 of a printed publication entitled "The Electrical Times," dated August 31, 1916, published at London, England, and by stipulation of counsel it was agreed that the original be withdrawn and a photographic copy thereof substituted therefor, which said photographic copy was then offered in evidence and was [62] marked "Defendant's Exhibit 10," the same being hereby referred to and by such reference made a part hereof.

Plaintiff's counsel admitted that the early Majestic devices 1, 2 and 3, hereinbefore referred to,

were made and sold more than two years prior to the filing of the application for the patent in suit, but the manufacture and sale of the other devices referred to as 1b, 2b, and 3b were not made until the fall of 1915.

Testimony of Victor S. Bean, on Behalf of Defendant.

VICTOR S. BEAM was then called as a witness on behalf of defendant, and his qualifications as an expert witness was conceded by counsel for plaintiff, and was duly sworn and testified as follows:

I have read and examined a copy of the patent in suit. I am generally familiar with the prior art dealing with devices of this character. The art in this special division electric heating and it seems to have started with the Morse patent. I am familiar with the defendant's device alleged to infringe this patent in suit. Referring to the Brown patent, I find practically everything shown and described in the Brown patent in the prior art; specifically, all of the elements seem to be embodied in substantially the same way in Shoenberg's patent No. 1,109,551. We have there a heater substantially of the same type as shown in the patent in suit. The Shoenberg patent shows the radiant type of heater. Some of the figures show it as a pendant device which may be attached to a plug or suspended in some way from the ceiling; some of the figures show the heaters of the strictly portable type. For instance, Fig. 5 shows a portable type heater. Another view

(Testimony of Victor S. Beam.)

is given in Figure 6. Figures 1, 2, 3 and 10 show a [63] pendant device, but in each you have a heating element placed within the curvature of a reflecting bowl with guard wires to protect the public from touching the heating device. Referring particularly to Figure 10, we find the provision of an extra covering or a rear covering for the reflector, and providing for an air space between that covering or shell and the reflector, the purpose of this being, apparently, to protect the reflector from being touched by the public and to convey away the heat. This device, shown in Fig. 10 is a flange for protecting the edge of the reflecting surface, or, rather, protecting it from being touched or protecting the public from being burned by the heat generated in the reflector. We have in this Figure 10 also a protecting cage or guard which is marked 14, and that guard is attached to the outer circumference of the flange which I have just mentioned. That flange is also shown in Figure 2 of this patent; likewise the ends of the guard wire, 14, are shown engaging the outer circumference, in that figure. Of course, Figure 1 shows the complete device, with the guard in position, engaging the outer flange. The heating device of this Shoenberg patent is arranged transversely to the longitudinal axis of the reflector, just as in the patent in suit.

Q. Is it located at the focus of the reflector?

A. Substantially so, yes. The reflector of the Shoenberg patent does not have any very definite focus, but it is located within the curvature of the

(Testimony of Victor S. Beam.)

reflector, and with the heating coil arranged in that way the heat is reflected by the reflector in a substantially parallel beam so as to heat up the object which it is desired.

Q. What are the real differences, then, as you see them, between the patent in suit and the Shoenberg patent which you have just referred to, so far as the heater element, the reflector and the protecting guard are concerned?

A. I do not see any [64] substantial difference between the two; certainly, they are the same in principle. While the shape of the reflector differs somewhat, the net result seems to be the same. The operation is certainly the same.

Q. Does the location substantially of the focus of the reflector import any limitation or definition as to the shape of the reflector?

A. Well, it is practically impossible to locate a coil of that sort at the focus of any reflector of which I have knowledge, because it would be too large. You can more nearly approximate an effective focus, however, by placing the coil in line with the transverse axis of your reflector. But if you put it cross-wise, as shown in the Shoenberg patent and in the patent in suit, you have certain parts of the heating device quite out of effective focus, and you get more or less divergence of at least some of the rays sent out by the heater. If your curvature is parabolic, you get the heating coil very close at points to the surface of the reflector, and that causes heat both from that close proximity and also the fact that you

(Testimony of Victor S. Beam.)

do not get good reflection from the effective surface, and that causes it to heat the reflector and provision must be made for taking care of that heat.

These exhibits "A," "B" and "C" all seem to have been built more or less in accordance with the Shoenberg patent just mentioned, and, indeed, they all have the date of that patent marked upon them. Exhibit No. "A" is of the pendant type; exhibit "B" is of the portable or pedestal type, such as shown in the patent in suit. Exhibit "C" is also of the portable type, and exhibit "D" is also of a portable type, with a pedestal but the reflector is mounted considerably different with respect to the pedestal than exhibits "B" and "C." They all have a concavo-convex reflector, they all have a transverse heating element mounted within the curvature of that reflector, [65] they all have guard wires of the patent. They differ, however, from the patent in suit in that they do not have the specific flange 3a of the patent in suit; instead of that flange they have a beading on the outer edge of the reflector, this beading apparently being for the purpose of stiffening of the edge of the reflector and to a certain degree at least providing for the attachment of the guard wires or cage. I should point out that these four devices are also different from the patent in suit in that there is no double casing for the reflector, or, more definitely, that there is no extra casing back of the reflector.

Q. Do you find anything in the patent in suit cor-

(Testimony of Victor S. Beam.)

responding to the turned-over edge or beading of these devices?

A. Yes. If you will examine Figures 2 and 5 of the patent in suit, you will find that same beading. It is at the outer periphery of the reflector designated by the numeral 1. You will find that turned back or beaded, and contacts with the inner surface of the flange 3a; that serves the purpose of strengthening the reflector, and provides for engagement between the reflector and the outer casing or flange, which flange is designated as 3a. There is also a small beading apparent in Figure 5, on the outer edge of the flange 3a. You will notice down at the very bottom of Figure 5 there is a projection to the left from the extreme outer forward surface of the flange 3a, which seems to be a very definite form of beading. I take it that is there for the purpose of protecting the outer edge, or possibly strengthening it.

Q. Do you find anything in Plaintiff's Exhibit No. 2 corresponding to the part you have mentioned?

A. Yes. It is quite apparent that there is a beading on the outer edge of the flange, which, in the patent, is designated as 3a, and which in this device is a flat ring outside of the reflector; there is also [66] a turned-over portion on the outer edge of the reflector in this device which in the patent is designated as 3. This turned-over portion, which may be designated as a bead, seems to strengthen the reflector; it provides for a fit between the re-

(Testimony of Victor S. Beam.)

flector and the flange. The reflector is screwed onto this bead—this bead is screwed onto the flange 3a, and where the screws are the reflector seems to be in quite intimate contact with the flange; but one place particularly in between the screws there is a small air space shown in very intimate contact.

Q. Mr. Beam, I would like to have you compare the plaintiff's device, which is admittedly an exemplification of what is shown and described in the patent in suit, that is, exhibit 2, with the defendant's device, which is in evidence as exhibit No. 5, and point out such resemblances and such differences as may appear to you, having special reference to the heater element, the reflector, and its annular member extending outwardly—that is, in the plaintiff's device extending outwardly from the margin of the reflector; and the protecting wire cage, its means of attachment, and the means of supporting and insulating the heater element. You may take up these features in such order as they may best appeal to you.

A. Starting with the heating element, which, of course, is the most important element, since it is one that generates the heat—the device would not be any good without that in there, I find quite a difference in the two devices in the mounting of the heating element; in the Westinghouse device, exhibit 5, this coil is mounted in the longitudinal axis of the reflector, and is inserted from the rear, allowing very ready removal, whereas in Plaintiff's Exhibit No. 2 the heating element is arranged transversely of the axis of the reflector. This is quite an important differ-

(Testimony of Victor S. Beam.)

ence functionally, because the [67] straight-line arrangement of exhibit 5 is a much better arrangement, since it is practically bound to give better heat distribution, and allows more freedom in design of the reflector. The transverse arrangement of the coil is bound to give irregular heat distribution on the reflecting surface, and, therefore, will generate considerable more heat at one point than another, and, in fact, heat up the reflector a great deal more than with the straight-line arrangement as found in defendant's device, exhibit 5. To overcome that heating up of the reflector the plaintiff has provided an extra casing at the rear of the reflector, so as to introduce a dead air space in between the two casings, and to prevent the public from coming in contact with the heated reflector; and, in addition, has provided the outwardly extending flat annular flange for the same purpose, that of protecting any person who should desire to touch the device from being uncomfortably heated. This flange acts in a sense as a radiator to conduct the heat away from the reflector. Defendant's device, exhibit 5, does not have the flange, but instead, has a beading on the outer surface of the flange, which beading corresponds to either the beading on the outer edge of the flange 3a, or to the beading on the outer edge of the casing. In plaintiff's device, exhibit 2, the cage or guard wire is attached to the outer periphery of the flange 3a, and has a distinct provision for hinging these guard wires or cage. In defendant's device, exhibit 5, there is no such provision for the hinging of the cage or

(Testimony of Victor S. Beam.)

guard wires, as the whole cage is readily removable. The most natural thing is, if you want to get at the heating device, or the inner surface of the reflector, to polish it, is simply to remove the whole cage, pull it right off. This cage, or these guard wires are not in defendant's device, exhibit 5, attached to any outer flange, they are simply attached to the outer edge of the reflector. [68]

Coming now to the specific method of attaching the heating coil in the two cases, we find that due to the transverse arrangement of the heating coil in plaintiff's device, exhibit 2, two connecting means are required and used, because this transverse arrangement, together with the necessary length of the coil, brings your lead from the coil to points in the reflector separated about $2\frac{1}{2}$ inches apart. That necessarily requires that they be brought through the reflector to the rear as two separate leads. Then after the leads are brought through the reflector, they are drawn together in between the two casings and brought out through the rear of the outer casing end in a cord, which is the means of attaching to a lamp or to a socket where they are used. In the defendant's device, which is exhibit 5, on account of the straight-line arrangement of the coil, the leads may be brought out through the casing in a much simpler manner, especially since there is no outer casing to the reflector. In this exhibit 5, the heating element is simply projected through the rear of the casing to the segment in position by set screws on the rearwardly projecting flange of the reflector.

(Testimony of Victor S. Beam.)

Q. As a matter of fact, does the reflector of the defendant's heater become hot in service?

A. It does—I beg your pardon, I was referring to exhibit 2. Now, referring to exhibit 5, which is defendant's device, and answering your question, the reflector of that design does not become heated to any noticeable degree in service, certainly not to any detrimental degree. No provision for protecting the public is necessary.

The COURT.—Just a moment; I would like to ask one question.

Q. Let me ask you this question: Is there a substantial difference in the temperature of the two devices in actual practice and operation?

A. I have noticed a difference in temperature, yes. In some of the plaintiff's devices I have seen [69] that the portion of the reflector nearest the ends of the coil have been tarnished apparently as a result of extreme heating.

Q. But I am thinking more of the outer edge, what is referred to as the flange in one, and what is referred to as the bead in the other.

A. That is the direct result of the distribution in there; that is, if you don't get your reflector overheated, of course you won't have—

Q. I am asking for the fact, rather than for an explanation. You tell me that the part of the reflector in exhibit 5, just inside of the flange or bead does not get very hot—hot enough to do any injury.

A. It does not; in fact, no part of the reflector does.

(Testimony of Victor S. Beam.)

Q. You mean to say, then, that that flange or bead is not there for protecting against injury?

A. I would say so, yes. I might add that the heat that comes to the outer edge of the reflector would come there by conduction from the other parts of the reflector. This is made of metal, which is a good conductor of heat, and if overheated in any spot, it would be conducted out to all the surface. You have one equal distribution of your heat on that surface, and that reflector has to act as a conductor of heat from one spot to the other.

Cross-examination of Witness BEAM.

I certainly consider the transverse arrangement of the elements as shown in the Brown patent is inferior to the longitudinal arrangement shown in defendant's structure and that he would get better results if he had arranged it longitudinally. As to whether or not the Brown patent contains any statement requiring or suggesting that the element be arranged transversely, the specification says it should be arranged preferably at the focus, and since he shows a parabola, it certainly is a strong indication that he wanted [70] to put it crosswise as he has shown. There is no specific statement that the heating element must be arranged transversely to the axis, but it is shown that way, and it would be difficult to carry out the language of the claim 4 if the other arrangement were used. It certainly would not be a natural way of carrying out the language of claim 4. The whole make-up of the device indicates that is the way his coils should be ar-

(Testimony of Victor S. Beam.)

ranged. The reason which makes me think that the transverse arrangement of the element will result in a poorer heating than the longitudinal arrangement, is that in the first place the heating element, especially if you were using a parabola, will at its ends come closer to the reflector than it should, and you interfere more with the reflection of the rays, due to the size of the heating unit, the necessary size of the heat unit, by the crosswise arrangement, than you would with the longitudinal arrangement. That is not purely theory. I think I can see that very definitely. I have noted devices like exhibit 2 which appear to have been made by the Majestic Company, in which the surface of the reflector near the ends of the coil had been burned. I have operated one of the Majestic devices in my own home and noted it. It is not a good arrangement for the coil in there on account of the generation of heat. I noted that last winter. It was cold last year, and I used the Majestic heater to keep warm. I bought it in the market from one of the supply houses in New York, and used it and still have it. I did not subject it to any scientific test to find the amount of heat it would produce. I simply noted its operation visually and by holding my hands in front of it and noting the heat. I noted it directly from my sense of feeling. I did not measure it with any instrument. I have also operated one of the Westinghouse heaters in my own home last winter. I compared it with the Majestic, but I did not subject [71] it to any scientific test. I did not

(Testimony of Victor S. Beam.)

use any thermometer to measure the degree of heat between the two. It was not necessary. Neither did I use a radiometer in connection with the two devices. My theories are and testimony is based on the visual observation to a great extent. If you look in the face of these devices, you can tell a great deal about distribution. I used the sense of touch; more particularly the sense of feeling. Of course, one of these heaters will produce just as much heat as the other if they have the same resistance and use the same current, so that as to that part they are all the same. I was speaking as to the direction of the heat and the distribution of it. I mean that the Westinghouse would distribute the heat more effectually than the other one, if you were looking for uniformity in the projected beam. They are cylindrical in form, or nearly so, and somewhat wider in dimensions. The Westinghouse heater projects the beams in parallel lines; I would not say that the Brown heater projects the beams in parallel lines; I would say that certainly it projects some parallel lines. As Mr. Henry has testified, on the horizontal plane it is quite divergent. You must bear in mind that the cross arrangement of the coil presents quite an obstructing surface to the reflector, so that the rays that are reflected backward have a habit of coming out and hitting the coil, and of course that tends to heat the back part of the coil more than the front. That, in itself, is a source of disturbance. The object of both heaters is to project the heat from the

(Testimony of Victor S. Beam.)

reflector out into the room in the shape of a beam, as nearly solid as possible, without having those heat waves scatter around in other portions of the room, and for that reason they are generally designated by the trade as beam heaters. My idea is that both of these heaters attempt to do the same thing, in the shape of using a beam [72] of heat from a reflector, and that the Westinghouse heater, by virtue of its longitudinal arrangement of the element, does that better and more effectually than the Brown, which has a transverse arrangement of the element. I have held a handkerchief in front of the Westinghouse device in immediate contact with the guard wires when the heater was in service and it did not burn the handkerchief at all. I have never tried it on the plaintiff's device, because I was afraid of burning my handkerchief. That problem of preventing that heating coil from obstructing the action of the reflector seems to have been the problem. I notice that Mr. Brown has had a recent patent issued to him for a way of getting around that.

Q. Well, if that is true, and you were afraid to put your hand over the front of the Brown heater for fear that it might be burned, or that it was too hot, then you must have anticipated or argued that more heat was coming out of that heater than out of the Westinghouse heater.

A. No, it was not my hand, it was my handkerchief. The point is not the amount of heat *in toto*, but the distribution of it; you get local hot spots.

(Testimony of Victor S. Beam.)

Q. If I understood you correctly, you said that the Westinghouse reflector did not heat up when it was in operation. Is that correct?

A. Oh, no, I said not detrimentally so. I mean it did not heat up to such an extent as to become detrimental. It got warm, warmer than when it was not in use. After it has been running for some time I have put my naked hand on the reflector without evil results. I have also put my finger on the flange, or what you call the bead around the rim and it was not detrimentally hot. I would not call it hot, it was warm. I don't remember putting my hand on the inside of the reflector during the burning of the device, but there would not be much difference. The Brown reflector heats up and gets hot, hotter [73] than the Westinghouse heater. For instance, as evidenced by the burning of the surface, and the general appearance. I have tested the two to see which gets hotter, by feeling the device and noting the distribution. The back of the Brown heater is cooler than the back of the Westinghouse, having an air space between. I should say it is the impingement of the radiant wave energy from the element against the surface of the reflector that heats the reflector. The rays strike there, and, due to the imperfections of the device, some of the energy is lost and that goes into heat. An ideal reflector would be one which reflects the entire energy without absorbing any of it. In all of the reflectors it is impossible to produce one of that ideal character, and, therefore, the reflectors in use do absorb

(Testimony of Victor S. Beam.)

some of the radiant energy and become heated up. That is true of both the Brown and the Westinghouse. Neither of them present perfect surfaces. Both of them absorb some of the radiant energy and thereby become heated. To call this annular portion around the edge of the Westinghouse reflector a flange, I do not think would be the natural way of describing it; that is turned over or beaded to strengthen the edge. If I wanted to tell a man what a flange is, I would say it was a distinct projecting portion. Specifically on a curved surface, I think it ought to be flat, but there may be exceptions to that. A great deal depends on the size, on the purpose, how natural it is to make it. If I had a flat piece of metal and were to bend the edge of it at a right angle to the plane of the metal, that bent portion would not necessarily be termed a flange. I would want to see it first before I spoke of it as a flange or bead. If you were to take a piece of tin plate, and bend the edge at a right angle, say one-quarter of an inch of the plate, bend that at right angles to the surface of the plate, you [74] might possibly call it a flange, but I think it would be more natural to call it a bead, or an edge, or a frame. Where it is flat, just as flat as this member a3 in the Brown device, it would be pretty difficult to say what you would call it. It depends on the purpose and appearance. The outer edge of exhibit "D," in plaintiff's prior device No. 3, there is a bead on the outer edge of the reflector within the terms of the definition. The prior

(Testimony of Victor S. Beam.)

devices No. 2 and 2b and No. 1 also have such a bead. They all have well defined beads, around their perimeter. The bead is a very small one. That bead is in the shape, practically, of a round metallic cord with the edge turned under so as to practically make it a round or solid shape, if you take it to mean cylindrical in cross-section. This thing in the Westinghouse heater which I call the bead does not have the outer edge turned over so that in cross-section it would be cylindrical; it is not turned around 360 degrees. That is not the same kind of a bead that I find in these Majestic devices with respect to the contour of the same. It would seem to me more natural to use the term bead in respect to the Westinghouse device. However, I do not think that matters very much what you call it, because Plaintiff's Exhibit 2 has much the same thing on the outer edge of its reflector, which in the patent is marked with the numeral 1. Whether or not it would be correct from a mechanical sense to term this projection on the edge of the Westinghouse heater technically a bead, I will say that if you gave that device to a mechanic and told him to bead the edge, he would quite likely come back with this form. I think that would go for a device of that size. If the edge of this device were turned under and rolled as shown in the Majestic device, you might call it a perfect bead, because it is cylindrical in cross-section. The reason the Westinghouse did not adopt that kind of a cross-section [75] is that it would cost more to turn that clear

(Testimony of Victor S. Beam.)

over. I do not know that it would not cost as much to make a bead, technically so-called in the manufacture of sheet metal as it would to manufacture that device as it is shown in the Westinghouse heater. I am not acquainted with the mechanical process of making beads on the edge of sheet metal. Sometimes it is turned over by spinning.

The COURT.—That you may understand each other, he may be talking about one form of bead, and you another. You have in mind a bead of the size, possibly, of this shown on the Majestic device, and he had in mind, possibly, a bead of the size indicated by this turned-over edge on the Westinghouse device.

Mr. MILLER.—Is that what you had in view in giving your answers?

A. I had in mind the turning of this particular curved portion into a cylinder.

The COURT.—Referring to exhibit 5?

A. Yes.

Mr. MILLER.—Q. You mean it was cheaper to make it just like this instead of to turn the edge under? A. Yes, as I understand.

Q. How would you define a concavo-convex reflector?

A. I had a definition on a memorandum which might possibly be better than trusting to my memory. I find I do not have it there. It is an egg-shell shape; it has a hollow curvature on one side, and a projecting curvature on the other. I cannot think of the technical terms at this time, but half

(Testimony of Victor S. Beam.)
of an egg-shell is concavo-convex.

Q. Is the inside of the curve regular and uniform throughout its surface?

A. It ought to be regular in curvature on both sides, but the degree of curvature on the two sides may not be the same. One form of the concavo-convex surface is termed divergent, and the other form is called the convergent.

Q. Look at Plaintiff's Exhibit 6 and tell me if the interior curvature of that device differs in character from that of the [76] Brown patent and the Westinghouse device?

A. Yes, it differs somewhat from both of them. This is bowl-shaped, or somewhat irregular curvature, whereas the plaintiff's device, exhibit 2, is of parabolic curvature, and defendant's device, exhibit 5, is still different in that it has a circular curvature.

Q. Is the parabolic curvature regular in contour throughout?

A. It appears to follow the outline of one particular parabola, if that is what you mean. Of course, you have got to bear in mind that the curvature of a parabola changes from point to point, whereas in a circle the curvature is always the same.

Q. The curvature in a parabola is always the same for any specific parabola, isn't it?

A. No. The curve changes as it goes outward. You cannot lay a draftsman's curve on two parts of the same parabola on the same side of the longitudinal axis and match them.

(Testimony of Victor S. Beam.)

Q. Is the curvature of the surface of the parabola regular above its axis?

A. Yes. All three of these are that; they are all symmetrical around a central axis.

The COURT.—Is that which you have in your hand?

A. Yes, taking this as the longitudinal axis, the curvature is the same on that side as on that side.

Mr. MILLER.—Q. But there are different curvatures in this exhibit 6? A. Yes.

Q. In fact, one part of it is perfectly flat, is it not? A. The back is flat.

Q. And the sides have different curves in them?

A. Yes, they have different curves.

Q. Some of them are concave and some are convex, are they not?

A. That might possibly be said of those curves. It is a little difficult to tell. The whole thing is concavo-convex to my mind.

Q. Would that device make an efficient reflector for a beam heater?

A. Yes, it would, depending on how you arranged the [77] coil with respect to it.

Q. Isn't it a fact that the heat rays would cross each other and be scattered out into the room in all directions, instead of in a beam?

A. No; that would throw a beam, possibly not a strictly cylindrical beam; it would be somewhat divergent.

Q. The rays would scatter out in the room, would they not?

(Testimony of Victor S. Beam.)

A. Not all over the room, no. I could reflect that onto you and you could feel it, and you would not feel it back of it.

Q. In Defendant's Exhibit "D," there is a plane surface at the back of the heater, and a curved surface at the side also. That is true, is it not?

A. Yes.

Q. Do you think that would make an efficient beam heater?

A. Yes. That is a little better adapted for a transverse heating element than plaintiff's device, exhibit 2, except that it is not quite big enough.

Q. You mean by that, that it would make a more efficient device than Brown's heater?

A. If the reflector were somewhat larger, I should think so, because it does not seem to have that problem with respect to the horizontal arrangement of the coil there. You see, you have got a flat surface at the back, there, and that is a uniform distance from the heating coil, and you would not expect it would burn on the surface as quickly as the other.

Q. Can you explain why it was that heater did not take sufficiently with the public to be permanent, but on the contrary, was abandoned when Brown No. 7 heater was introduced?

A. Well, it was not copper colored; that is one thing; and it was small, not near as big as that other. Plaintiff's Exhibit 2 is coppered up.

Q. In other words, you think that the Brown heater that is in evidence here, No. 2, by virtue of

(Testimony of Victor S. Beam.)

being made of copper, and in the form in which it is there shown, was more attractive [78] in appearance than the old heater. Is that what you mean to express?

A. Yes, it is more attractive on that account, coppered up.

Redirect Examination of Witness BEAM.

Referring to the patent of Warner, No. 1,120,003, Defendant's Exhibit "H," I find there is a turned-over edge on the reflector which is indicated in the patent by the letter f, which corresponds to the turned-over edge of defendant's device. This is particularly shown in Fig. 2 of the Warner patent at the extreme left-hand edge of the reflector.

Recross-examination of the Witness BEAM.

That turned-over edge of the Warner patent shows a complete turning-over of the edge so as to produce a bead which in cross-section is not quite cylindrical, but is turned back so as to meet the outside portion of the reflector f, and at that point joins the outside casing c. There is no statement in the specification of that patent regarding the turned-over edge.

'On this point defendant rested its defense.

PLAINTIFF'S REBUTTAL.

Testimony of George J. Henry, for Plaintiff (In Rebuttal).

In rebuttal, plaintiff called as a witness GEORGE J. HENRY, who gave the following testimony:

(Testimony of George J. Henry.)

Referring to Defendant's Exhibits "A," "B," "C" and "D," and comparing them with the mechanical structure shown in the patent in suit as to similarities or differences, speaking generally as to all of these exhibits to which you have referred me, they are noticeably distinguished from the Brown mechanical patent in suit, in that the reflector is not a concavo-convex reflector in any sense of the word, as [79] contemplated in the Brown patent. They are all devoid of an annular member extending outwardly from the margin of the reflector. They are all devoid of a focal point or focal area or volume about which the heat element is disposed. For the first and second reasons which I have given, they fail to deliver a radiant beam or a beam of radiant energy which would be sensed as heat by a person in the range of such a beam. On account of the shape of the reflectors in all five of these exhibits, the reflected rays, because, of course, there will be reflected rays of radiant energy, will criss-cross in various directions, producing an hiatus of impacting beams or rays—not beams—of different intensity at various points, and none of them sufficiently intense to make the heater useful as a beam heater to a body located at any material distance from the heater, itself. With the exception of exhibit 6, they are provided with heat elements, and exhibit 6 is the dish-shaped back only of the heater which was intended to be furnished also with a heat element; the reflector or back, for, really, it is more probably

(Testimony of George J. Henry.)

a backing or housing than a reflector in all of these five heaters, as rather a protective shield than a protector. It, of course, does function to some extent as a reflector in exactly the same way that a stone wall functions as a reflector of radiant energy. If one is passing by a stone wall on which bright sunshine is impinging, you at once detected some reflected warmth therefrom, or at least you detect warmth generated by radiant energy reflected therefrom. In this case there is a very large area reflecting rays of radiant energy in all directions, and if you are close to such a surface you will, of course, receive enough of these upon the sensory nerves of the body to experience the sensation of heat; in the same way, if you hold your hand close to one [80] of these heaters in the exhibits now under discussion, you will experience slightly more heat in the front of the heater than you will in the back. Some of this is due to reflection of radiant energy from the interior of the casing, or reflector, but the form of the reflector in each of these exhibits is such that the rays from different portions of the heater unit itself, as reflected from different portions of the reflectors themselves, will be very divergent in the aggregate, and in the case of any individual point or ray, it will be in criss-cross, and will, in turn, criss-cross other rays in a way to produce a very highly inefficient radiant emanation. This radiant emanation cannot be called a beam in the sense of that which is producible and is produced by the reflector of the Brown patent,

(Testimony of George J. Henry.)

with the heating element arranged a focus or about an axis on which several foci will lie. In either of the last two instances employing a concavo-convex reflector, that is, one which is curved at every point in such a way that the curve is expressible by a mathematical formula, as is that of a circle, or any of the *comic* sections and certain other curves; in the case of such a concavo-convex reflector with a heat source or unit mounted about its foci, the emanating rays will be conserved in the shape or form of a beam, whose cross-section will be more or less circular, according to the disposition of the heat unit within the reflector, and the shape of the reflector surface. Such a reflector beam is generated in and emanates from the Brown heater as constructed in accordance with the patent in suit, and likewise from the heater of the defendant's construction. In the reflector of Plaintiff's Exhibit 6, the greater portion of the reflector, or, at least, that which receives the greater portion of the rays emanating from the heat unit, and which, to be efficient, should be reflected as a beam, is in reality a flat surface. [81] The same applies to the other exhibits, with the exception of Defendant's Exhibit "C," in which there is likewise a flat surface, but not of quite so great proportions. This flat surface will reflect radiant rays in practically every direction. These exhibits are of nickel or of nickeled surface, and as such are not nearly as efficient in the reflection of the radiant heat rays. They are all devoid of a cool edge removed from

(Testimony of George J. Henry.)

the range of the impact of the radiant rays. They all, being inefficient reflectors, will become quite hot, and the protection of such a rim in their case would be even more necessary than in larger reflectors and of more efficient shape. In the case of exhibit "D," there are two heat elements manifestly out of any central axis, and the construction of such a device as this clearly indicates a total avoidance or lack of appreciation of any reflector rays in which there could possibly be conserving in the form of a beam. I have made tests with heaters of the kind illustrated by these exhibits which are before me with a view of ascertaining their efficiency as compared with the efficiency of the Brown heater. With some of them I found they were grossly inefficient as regards the production of a radiant beam. Radiant beam would be such a beam as would appear of light, for example, in coming through a hole in a roof into a darkened room; sun rays would create a radiant beam; the radiant beam is made up of, presumably, waves in the ether traveling in perfectly straight lines and at an enormous rate of speed, the same as light; light being one of the manifestations of radiant energy, and of a certain specific wave length. Other wave lengths of radiant energy which do not give us the sensation of light are observable in other devices, or may be made manifest to us by other devices, as for example, that which produces heat. We cannot see the radiant energy which produces heat, [82] but our sensory

(Testimony of George J. Henry.)

nerves detect the impact of the waves. For all purposes of ordinary comparison, it is well to think of them just as though they were like rays; that is, they travel in a straight line, they travel at the same rate of speed; they are subject to substantially the laws of optics in that they may be reflected from certain surfaces more than other surfaces. Polished copper is a highly efficient surface for the reflection of radiant heat waves, meaning by that radiant heat energy having a certain range of wave lengths.

Q. Does the Brown heater in suit produce a beam? A. It does, decidedly so.

Q. Is there any utility or advantage in producing that kind of a beam?

A. A very great utility, in that a relatively small consumption of electrical energy may be transformed into heat waves and concentrated at a particular point without making necessary the warming of the entire room, for example. With the Brown heater we have a heater that will keep you comfortably warm in a perfectly cold room; you can keep all the windows open and still retain a very high degree of efficiency of warmth, attained from a very small consumption of electrical energy. It is quite analogous in receiving qualities, and as different from most forms of heaters to an experience that one would have in walking across a glacier on a very warm summer day, or out on the snow on a very warm day; you feel a decided sensation of warmth, so hot at times you may have to take your coat off, and still the thermometer is

(Testimony of George J. Henry.)

at a very low temperature. The reason is that you are receiving a very intense beam of radiant energy from the snow. The same will apply to a Brown heater. A thermometer in a room will show almost no increase of temperature, and yet you can get into a hot perspiration by being within the beam of [83] one of the heaters in a very short space of time; the room itself is not warm, the air is not warm, the other objects are not warm; the warmth is merely the sensation you get from the radiant beam on your body from the reflector of the Brown heater, and, as such, it is the only type of heater that is in this case which will produce the beam. The Westinghouse I consider the same identical type. These other heaters do not produce a beam of heat.

Q. Is there any exhibit in evidence here of the prior art which does produce that kind of a beam?

A. No, there is not, precisely.

Q. Do you consider the production of a beam such as that as being new in Brown so far as the evidence here shows? A. It certainly was.

Q. That is really the essence of his discovery, then, is it? A. I consider it so.

The Shoenberg patent, which is Defendant's Exhibit "I," does not show anything with reference to this issue here, any further than what is shown by these five exhibits which I have referred to, and my answer in regard to the five exhibits applies also to the Shoenberg patent, No. 1,109,551.

The Morse device (Defendant's Exhibit "F")

(Testimony of George J. Henry.)

is one for the purpose of concentrating heat upon a portion of the body for therapeutical use, primarily, and is a heat container rather than a heat reflector, the idea of the patent being clearly expressed as intending to conserve the heat within the bowl-shaped member No. 1.

The COURT.—Does that throw a beam, or does it not?

A. I would consider that, if utilized on standards, it would go a little closer to throwing a beam than would the nickel-plated devices and the Shoenberg dish form to which I have testified, but the source of heat is very clearly and materially [84] removed from the focus, and the edges of the reflector are extended over in such a way that most of the beam thrown from the back of the reflector would be interfered with by the side before it ever left the reflector, with the result that you would have a very inefficient reflection of heat rays, and a very material divergence as soon as you got away from the front edge. The purpose of the inventor was to concentrate his heat along the line corresponding with the flange, numeral 2, and it might be efficient for that, but would not be efficient as a radiant reflector for producing a beam. Defendant's Exhibit "G," Geiger patent, in connection with the model which has been put in evidence as an exemplification of it and marked Defendant's Exhibit "M," is very decidedly different from anything shown in the Brown patent, in that the reflection from that would be spread over a very large surface

(Testimony of George J. Henry.)

and of a highly irregular nature. The rays of radiant energy would criss-cross and diverge to a degree exactly the contrary of that desired in a beam heater. It is just the antithesis of a beam heater. Referring to the English patent which has been referred to as the Simplex patent, No. 19,971, a reflector of a form corresponding with the casing or outer sheet of the reflector of this patent would not throw a beam in any sense of the word. Most of the heat rays will be reflected back and forth within the heater device, itself, resulting in heating up the reflector, rather than in securing reflection. The few rays that will be thrown outwardly will be criss-crossed in all directions, doing just the contrary of a beam. The shape of the reflector, the flutes that are in it, its long heat element, and its conical lines, would produce that criss-cross. Referring to the Warner patent, Defendant's Exhibit "H," the same applies to this heater; it will not produce a beam in the sense that I have been employing this term, and [85] as contemplated in the Brown heater. The object of this and other heaters in the art seems to have been the production of warm air, with the idea that the transference of warm air by convection will do the desired heating. The Brown heater is not intended to produce warm air, it being distinctly a radiant heater as distinguished from the type of heater indicated in the Warner patent. For example, Warner does very clearly, commencing at line 52, page 1 of his specifications, "Substantially all

(Testimony of George J. Henry.)

the surface of the resistance wire is open to contact with the air, producing a structure in which the heating effect has the greatest possible efficiency, with the result that the device, as a whole, though in a small and readily portable form, is capable of readily heating large volumes of air, making it particularly useful for the heating of rooms."

The manner in which the annulus carrying the resistance is formed and its location, materially away from any focal range, clearly indicates the intent of the patentee was not the employment of a reflecting surface to produce a beam, nor did he produce a reflecting surface, a heat unit which would produce a beam, but, rather, a container or circulating structure about which air would circulate and be heated.

Referring to the Porter patent, Defendant's Exhibit "N," this is an electric fan in which, by the employment of resistance embedded in or upon the blades of the fan the inventor contemplated the warming of air which would pass over the fan blades when the fan was in operation; the air passing over the blade would become warm and would be thrown out, and by convection would warm objects on which the so heated air would subsequently impinge. It is not a beam heater in the same sense at all as Brown, nor is it a beam heater in any sense. [86]

Q. Referring to this Westinghouse heater, Plaintiff's Exhibit 5, please state whether or not the curved-over outer edge of the reflector that is there

(Testimony of George J. Henry.)

shown can be properly termed in mechanics as a bead?

A. I do not so consider it, and in mechanics I would consider the proper term to apply would be a flange. A bead is ordinarily where the metal is turned over on itself, and in intimate contact, without air space between, and, moreover, forms a complete circle or substantially a complete circle. This is a flange in every sense of the word in mechanics, and in the sense of the Brown patent.

Cross-examination.

Mr. CARR.—Q. What is the turned-over edge of the part marked "1" in the drawing of the patent in suit?

A. That is a flange. It is not the entire flange contemplated in the patent, but it is in mechanics a flanged-edge on the reflector 1.

The COURT.—Q. Suppose it were not turned over, what, then, would it be?

A. Do you mean if it were at right angles to the axis?

Q. No. If this were not turned over at all, it would be a flange, would it not?

A. Yes, it would, in mechanics.

Q. Being turned over, what is the turned-over part called?

A. If I were describing that to a workman in metal, I would call it a turned-over flange. In order to describe it fully to him he would have to be given a sketch; whereas, if he were making the reflectors and I instructed him to put a bead on

(Testimony of George J. Henry.)

the outer edge, I am sure he would know at once what I meant and would produce a bead on there. Flanges are of various forms, depending on the purpose for which they are intended.

Mr. CARR.—Q. In view of your criticism of what is shown in the Shoenberg patent, No. 1,109,-551, please note this [87] language appearing on lines 48 to 53, page 1, specifications.

“The reflector consists preferably of a highly-polished metal shell 1, which is somewhat hemispherical or dome-shaped, and serves to reflect the heat waves received from the heater and direct them outwardly from its inner concave surface.” To your mind, what is the significance of that?

A. That portion of the reflector is of concave form, and does reflect rays outwardly. The edges of the reflectors in the several nickel-plated exhibits, “A” to “D,” and 6, to which I previously testified, all answer that description. That is, a portion of the reflector is of a curved form; that curve does reflect rays outward, but it does not follow that those rays take the form of a beam, which are collected together in the form of a beam; in fact, they are not in any of these exhibits, or in that patent.

Q. Is there any criss-cross and divergence of heat waves in the operation of the devices of the patent in suit?

A. There is to a small degree, a very small degree compared with the previous art. There is some direction outwardly in the previous art, but to a

(Testimony of George J. Henry.)

very small degree. The beam is formed very perfectly in the Brown heater, the device of the plaintiff, so much more perfectly than it is in any of the heaters of the previous art that there is no comparison as regards the utility of that beam form of heater. I know that from very close investigation in experimental work on a great many different forms. I have not made comparative tests of all the heaters which I have been criticising. I have made them of a great many different forms of reflectors. I have made a very close study of the reflection of a radiant energy from a heat unit on various surfaces and under varying conditions, but not with the specific devices I have referred to.

[88]

Q. You have mentioned the fact that the devices appearing here as Defendant's Exhibits "A," "B," "C" and "D" have nickel plates; what significance do you attach to that?

A. Two very important points—the first one is very important; I do not consider it as efficient a surface for the reflection of radiant energy. The second is the question of appearance. I consider that the copper has a very superior appearance to the nickel. It suggests warmth.

Q. So far as the matter of efficiency is concerned, your opinion is based upon test, or theory?

A. Largely theory. I have made no tests on the nickel surfaces that warrant me in saying that.

Q. In the matter of the Plexism heater, a sample of which has been called particularly to your atten-

(Testimony of George J. Henry.)

tion during your direct examination, I desire to call your attention to Defendant's Exhibit 8 attached to and forming a part of a deposition on file in this suit, in which appears an illustrative diagram, and the following statement:

"When on circuit the appearance is that of a glowing circle of fire which produces a most cheerful effect of heat rays being thrown forward in a more or less parallel beam in any direction, according to the angle at which the reflector is swiveled."

In view of that, are you still of the opinion that the patent in suit is the first disclosure of the beam type of heater?

A. I certainly am. This reflector that you have referred me to, and particularly the diagram showing the arrows indicating supposititious divergent rays, I will say that in all probability those specific rays will be thrown out from that form of reflector, and that form of heater, but that is about all of the rays that will be thrown out, a very, very small percentage of the total heat. The rays that come from every [89] other point on that long heat-generating unit will be thrown at all kinds of angles, every possible angle. So that the actual rays which will emanate from there in an axial direction are but such a small percentage of the total that I am convinced more than ever that that form of reflector would be inefficient for the production of a beam. There is no question but that the man wanted to produce a beam, but he did not do it in this form of reflector, or in that form of heater.

(Testimony of George J. Henry.)

He would have to get up pretty close to that to feel the radiant energy. That is my opinion, with a given quantity of electrical energy expended, you will have to get up pretty close to that, with a Shoenberg form of heater, to feel the radiant beam. It will probably generate as much heat—there is no question about that, as Mr. Bean pointed out, but that heat will not be directed in the form of a beam with a sufficient efficiency to warrant calling that form of heater a beam heater. It will get hot itself, it will heat air around it locally a little bit, and heat will be extending that way; but in the Brown form of heater, the idea was and the result was that a larger percentage of that heat is gathered and thrown out in the form of a beam as radiant energy. This diagram which you have handed me is highly misleading; it is purely an advertising stunt; it is a salesman's idea of how to present a thing to the public and get them to buy, and I have no doubt he put it over. But it is as misleading as a diagram could be as regards the rays that emanate from the inside of that form of heater in action.

Q. That is, you would put it in the same class with the Majestic heaters that preceded the No. 1?

A. Generally speaking, as regards inefficiency in the production of a radiant beam, yes. The man who made this diagram undoubtedly drew his lines backward; he started out with straight lines indicating an emanating [90] beam which he wanted to obtain; he came back on to one spot of his reflector; then he made his angle of incidence equal to his

(Testimony of George J. Henry.)

angle of reflection, and found that would fall on the heat element at a certain spot, and he argues that that is the spot that reflects that beam. Well, it does. But what happens to all of the reflected rays from the other spots on that heat element; it is a great, long heat element, and every point on that heat element is impinging rays on the same identical spot on the reflector, and they are going in every possible direction. It shows a total misconception of the construction of a reflector and a heat unit to produce a radiant beam.

Q. Your contention then is, as I understand it, that the Brown No. 7 heater embodies a concavo-convex reflector, and that nothing prior to that did?

A. No, I didn't say that at all. My answer was very clear, that it embodied a concavo-convex reflector with a heat-generating unit about the focus or focal range of that reflector, and that as such I consider it the first in the art to produce an efficient radiant beam.

Q. When you say "about," you mean projecting through, do you?

A. I meant just exactly what I said, "around." The focus falling within the heat unit is what I meant.

The COURT.—Q. Would that be true of the Warner patent?

A. No, it would not be true of the Warner at all.

Q. Why isn't the heating element around the focus there?

A. I say the focus falling within the heating ele-

(Testimony of George J. Henry.)

ment. In the Brown we have a heating element like this, the focal point falls within that range.

Q. I was trying to get the sense in which you used the word "around" or "within."

A. Within the range of heat generation. The heat generation is off in here. It is a circle in this case.

Q. If that circle were closed, then it would fall within your definition? [91]

A. If it were all like this, yes. You mean if all this in here were closed up and all generating heat?

Q. Yes. A. That would be true.

Mr. CARR.—Q. Is that true of the defendant's heater, in your opinion? A. Is what true?

Q. I mean, is it true that the focus of the reflector falls within the heat element?

A. It does. The focal range does for a radiant beam. What you probably have in mind is this, Does the center of the circle which forms the reflector fall within the heat unit?

Q. That is the focus, isn't it?

A. No, it is not, in any sense of the word.

The COURT.—Q. I want to ask one question. Should I desire to experiment with these various devices by the use of light, as I understand you, the laws of light are substantially the same as the laws of this radiant heat energy?

A. As regards reflection, yes.

Q. In other words, if they would throw a beam of light, they would throw a beam of heat energy.

A. Yes; in that case your light source should be

(Testimony of George J. Henry.)

the same size and position as the heat source. If we think of these utilizing light in place of the heat unit, it is true that in every one of them you will get light reflections from your reflector. In the Plexism, you would get a decided light reflection, but if you will get off materially to one side you will also get your light reflections, by which is indicated that heat beams will also come very much to one side. If you take the form of the Brown and of the Westinghouse and stand in front of it with a source of light here, and the heat unit, by itself, will produce a source of light for you—it is the way to try them out; you will see the whole flowing bowl in each case at a material distance away in line with the beam, in line with the axis; if you get [92] a little bit to one side that disappears very rapidly, showing the light rays, and, therefore, the heat rays; they will diminish very rapidly as you get off to one side. In the case of the Brown, if you will set that 9 feet from you and then move at definite points at right angles to that axis 1, 2, 3, 4 and 5, feet from the center, you will find that your heat beam is growing slightly weaker; but at a distance of 2, 3, 4 and 5 feet you will find that it is over 100 per cent more efficient than the Westinghouse, due to the flattening out of the beam. At the center, at points of 1 and 2 feet from the axis, you will find that the Westinghouse will be more intense; it will fall off more rapidly, due to the differing positions of the heat unit. But in both cases you will get a decided heat beam 10 feet in diameter, or 10 feet wide, I

(Testimony of George J. Henry.)

will say, at a distance of 9 feet from the unit.

Q. Suppose you were to put an ordinary light bulb in one of the Shoenberg patent devices at the point where the heat element is now installed, would it or would it not show a distinct spot of light upon the wire, say 10 or 15 feet away?

A. It would not.

Q. But it would in the No. 7 or the Westinghouse?

A. It would. That would be a very nice way to test it.

Q. Why couldn't you read the reflector in the Majestic device, No. 7 into the patent claims of the Shoenberg patent, where it says a hemispheric dome-shaped reflector; that is, suppose you put aside these separate devices and just took the patent alone, I mean. I understood that counsel for the defendant read those terms from the patent.

A. The only claim, your Honor, that mentions that is claim 6:

“A dome-like reflector, having inner and outer members held in spaced relation by providing a chamber or channel between—” and so on. [93]

I can only say that I don't believe that the patentee had in mind the use of a reflector with a heat element substantially at or around the focal point of any particular curve which would produce a radiant beam. He does not speak of a radiant beam. He has in mind the throwing out of radiant rays.

(Testimony of George J. Henry.)

Q. But it does not say so in the patent in suit?

A. Not as a radiant beam. He spoke of it as radiant type of heater.

Q. What I am trying to get at is your view as to whether or not you could claim this particular structure now in suit, which is No. 7, under the Shoenberg patent? A. I doubt it.

Q. Why not?

A. Because I don't think the teaching is sufficient in the Shoenberg patent.

Q. Is this hemispheric, or dome-like, or not?

A. You can employ a hemispherical form, or dome-like form, if you place your element at the proper point in it to secure thereby a beam; but there is no suggestion in the Shoenberg patent of the recognition of any heat center or focus.

Q. Not in the Shoenberg patent?

A. No, sir; I don't find any.

The COURT.—What is there in the patent in suit?

Mr. MILLER.—(Reading from line 48, page 1 of the Shoenberg patent): "The reflector consists preferably of a highly-polished metal shell, 1, which is somewhat hemispherical or dome-shaped."

The WITNESS.—The word in there "somewhat" is thoroughly consistent with his drawing, which shows only part of the reflector made curved and the back portion of it flat.

The COURT.—Q. In the patent in suit, what is there to indicate the location of the heating element?

(Testimony of George J. Henry.)

A. It is mentioned in the claims, themselves, in one place. I will find it in just a moment. Take claim 1:

“An electric heater, comprising a concave-convex reflector, a heating unit supported at substantially the focus of said reflector.” [94]

Line 33: “In spaced relation with the reflector, 1, and preferably at the focus of its curved surface.”

The whole patent is based upon the theory of using a heat-emanating source at the focus of a curved reflector for the purpose of producing a radiant type of heater. For example, it says at line 9: “This invention relates to electric heaters in which the heat waves”—the use of the word “waves” is significant of radiation,—“are generated by a resistance coil or heating unit, and are then reflected from a highly polished surface.”

It was old in the art to employ reflectors for light, locomotive headlights, and things of that nature, but no one had used it for heat as a radiant beam. That is my belief.

Testimony of Edmund N. Brown, for Plaintiff (In Rebuttal).

EDMUND N. BROWN was then called by plaintiff in rebuttal and testified as follows:

After we put out our No. 7 on the market, other manufacturers put upon the market styles of electric heaters which they had not been marketing previously to our No. 7 appearing. The first of these

(Testimony of Edmund N. Brown.)

was the Hotpoint, a sample of which was marked "Plaintiff's Exhibit No. 3." After our No. 7 appeared, the defendant put on the market a heater represented by the Westinghouse heater here in evidence. Other manufacturers put heaters on the market. I herewith produce the heaters themselves. We have a laboratory full of them down town. Here is one put out by the Simplex Heating Company, the same being sold by Holbrook, Merrill & Stetson as jobbers in San Francisco. They appeared in the fall of 1918 after our No. 7 had been put on the market. The firm of Landers, Frary & Clark also put out a heater of that type, and I herewith produce a sample thereof. The Rutenber Electric & Mfg. Co. also put out a heater of that type, and I herewith [95] produce one. The Estate Stove Company of Hamilton, Ohio, also put out a heater of that type and I herewith produce a sample of the same. The General Electric, which is now amalgamated with the Hotpoint and Hughes Company under the Edison Electric Appliance Company also put out a heater of that type. The Hotpoint Company was afterwards absorbed by the Edison Company. The General Electric put out one type and the Hughes Company another type, and the Hotpoint another type. Plaintiff's Exhibit No. 4 was put out by the Hotpoint Company.

Cross-examination of Witness BROWN.

The manufacturers whose names I have just mentioned advertised their product pretty lively. The Hotpoint Company was a pretty big advertiser in

(Testimony of Edmund N. Brown.)

everything. They advertised very liberally. They advertised in the Saturday Evening Post and some National Magazines; we advertised in the newspapers, and through circular matter, and at Expositions, Fairs, etc. Since these suits have been started, Landers, Frary & Clark have practically taken their heaters off the market so I have been informed by the jobbers, and their advertising has practically ceased. I don't think the Rutenber people are doing any advertising to speak of. I have not seen as much advertising by the Estate Stove Co. this year as I formerly did.

On this point it was stipulated that the following testimony given by the witness Edmund N. Brown in case No. 492 should be copied into the present case, with the same force and effect as if given here, and the same is as follows: [96]

With reference to the use of alloys or wire made of alloys, other than the Marsh device, in these exposed heaters, we used either chromium or nichrome. We used Excello first obtained from the Herman-Bowker Company in New York. It was a wire that was on sale in the market, and we used it on all of our heaters prior to the time that we commenced to manufacture our No. 7. We had no trouble in getting that wire until after the War was on. The difficulty then was because of war conditions. We also used another wire besides the Excello called Calido made by a firm at Morristown, N. J. After the plaintiff started in its business in 1914, the first heating device we put on the market was a pendant

(Testimony of Edmund N. Brown.)

type, called by our trade name No. 1. The shape of the reflector of the device was what we called a pie-plate and is the same as the device which I now produce.

Here the device in question was put in evidence and marked Plaintiff's Exhibit 6.

(Witness continuing:) After that we put on what is called a kind of a dish plate which is represented by this model, Exhibit "A." It was made of nickel, and intended to be suspended from a point of suspension projecting from the wall or hanging from the wall. We do not offer that device for sale now.

The second device which we put on the market was known by our trade name No. 3. It has a glass knob, and it is represented by Defendant's Exhibit "D." We have not continued the sale of this device, and it likewise has been abandoned.

The next device we put on the market was the one termed by our trade name No. 10. That was the same shape as an oil stove. It had a back to it like an oil stove, about one-third of it—the front part was a guard, different from the ones we have on the other type heaters; it stood up on four legs. [97] It looked very much like an oil stove. We also discontinued the sale of that device and it likewise was abandoned.

The next device we put on the market was the one we styled by our trade name "No. 2," and represented by Defendant's Exhibit "B." We abandoned that device likewise as we did the other devices.

(Testimony of Edmund N. Brown.)

The next heaters we put on the market were designated by the trade names 1b, 2b and 3b, which were put on simultaneously. They were to take the place of our former Nos. 1 and 2 and 3. They had a bell shape which we thought would be more efficient. Defendant's Exhibit "C" represents the said 2b and 1b was the pendant type, and the one with two elements was 3b. The 1b was the suspension type, the 2b and 3b were the same with the exception of the number of elements. The 2b was to take the place of the former 2, and the 3b was to take the place of the former 3. We proceeded to sell the 1b, 2b and 3b, and we abandoned them later.

The next heaters were known by our trade names 4, 5 and 6. They were of the square type or box type, and are illustrated by a device which was put in evidence in the prior litigation and marked Plaintiff's Exhibit 18. There were three figures shown at the bottom of the said exhibit. They have the general appearance of a guard or fire place, and are called our box type heaters. No. 4 has a single element, No. 5 two elements, and No. 6 three elements. That and the dimensions are the only differences between them. We met with considerable success in the sale of our Nos. 4, 5 and 6 heaters, and have continued to sell them to this date, and carry them in our catalogue and stock.

The next type of heater we got out was known by our trade name No. 7, which is represented by my model in evidence here, and that is the one I have testified about on direct [98] examination. Our

(Testimony of Edmund N. Brown.)

object in getting out so many styles of these heaters was that I knew I did not have the one that I wanted until I got the No. 7. I was striving until I hit on the No. 7. I did not have the one that I thought was the proper heater. I tested that matter out by putting them on the market and before the trade and selling them, and in this chain of evolution I finally reached the No. 7 heater, and I found that out as I put them out to the trade. The others were abandoned all excepting Nos. 4, 5 and 6 (box type heaters) which we are selling to-day, but that is a different type of heater. After our No. 7 came on the market we didn't put out any other style or change the design. We got out what we called a No. 8 of the same design, only that we put two elements on it; that was to get additional heat. I might add that we are confining ourselves in the No. 8 to absolutely the same type reflector. Our sales of No. 7 which we put on the market in comparison with the sales of previous heaters increased, you might say, with leaps and bounds, I mean the No. 7 heaters. The No. 7 sold in much greater numbers, several times greater, you might say, as it went on, and the sale of No. 7 is increasing all the time. The present year is the largest we have had up to date in the sale of the No. 7 heaters. I want to say one thing. This year we are putting out a little larger reflector on our No. 7 and calling it 11, but that is the only change. We are calling it that to let the trade have something to distinguish it by. The diameter of No. 11 is 12 inches. We aban-

(Testimony of Edmund N. Brown.)

doned the four types of heaters and confined ourselves to No. 7 because we considered the No. 7 a better article, and we sold a great many times more of the No. 7 than we did of any other types. [99]

The photograph of our exhibit at the Panama Exposition which has been put in evidence shows our former heaters, No. 1, No. 2, No. 3 and No. 10, and there is one kind of a bird cage we had there, but it was only an experiment; we did not market them generally. We had one hung up on the wall that was portable also, but we did not sell many of these. Those were all of the portable type. The photograph does not show either 1b, 2b or 3b. Those, the 1b, 2b and 3b were gotten up in the fall of 1915, which was too late for the Exposition to be shown in the photograph. That series, 1b, 2b and 3b, was gotten up to take the place of 1, 2 and 3.

Referring to the heater of the Simplex Conduits, Limited, of London, England, designated as the British patent, which has been offered in evidence (Defendant's Exhibit "II"), no heaters of that description and appearance have been on the market in the United States that I know of, and my opportunity of determining what heaters are on the market in the United States is that I make it my business to always keep in touch with anything that comes out in our line.

Referring to the other heater which has been offered in evidence here, the Warner patent (Defendant's Exhibit "H"), I talked to some dealers and they tell me that that has been taken off the

(Testimony of Edmund N. Brown.)

market by Landers, Frary & Clark, the manufacturers. I have endeavored to find another one in the city here but have been unable to do so.

When we got up our No. 7 heaters, the heaters which we abandoned and discontinued were the "b" type heaters, 1b, 2b and 3b and No. 10, and previous to getting out of these types we had abandoned the others, 1, 2 and 3. Those prior heaters were abandoned because we were, you might say, in a period of evolution. We were experimenting all the time to see what was the best and we found the No. 7 a better heater, [100] more efficient, more ornamental to the eye and looked better. Since we put our No. 7 on the market, we have not put any other or different style of heaters on the market, except our No. 8 which is the same as No. 7 with the exception of having two elements. As to how our sales of the No. 7 compared with the sale of our previous heaters which were abandoned, they were so far ahead—they ran into the hundreds of thousands, that is the No. 7 did. We have not sold many thousands of the others. The trade liked the No. 7 better than the others; in fact, to state an expression of the trade, I can state one remark, that we had out now the right kind of a heater; and such like remarks.

Cross-examination of E. N. BROWN.

Our sales of the previous heaters, Nos. 1, 2 and 3 and 1b, 2b, and 3b, were not confined to the Pacific Coast. We were given to understand by the trade

(Testimony of Edmund N. Brown.)

that the reason why they seemed to like the No. 7 better than the preceding heaters was that they liked the appearance better; it was also a more efficient heater; they liked the appearance. They made the remark, "Now, you have got something that looks right." Never prior to our No. 7 heater did we market a heater of portable type having a burnished copper reflector. In regard to our ability of disposing of all the heaters of the beam type we have been able to make, I will say that we have restricted our manufacture on account of the infringement. We could make a great many more than we are making to-day if we knew that our rights were being protected. We have not been able to dispose of all we made. We carried over some last year. I believe we could supply the entire trade of the country if we had an unrestricted right.

The Excello wire referred to by me is similar to the Marsh patent wire. We took a license under the Marsh patent because we knew we would be infringing if we did not, and that [101] we would be subject to being sued.

We have a few of the heaters preceding No. 7 on hand of different types that we have been unable to sell, but we do not list them on the market. We have not been able to dispose of those heaters.

Defendant then produced a pamphlet or folder and the witness identified it as a pamphlet which plaintiff is now getting out, containing illustrations and reading matter on heaters Nos. 4, 5, 6, 7, 8, 11,

(Testimony of Edmund N. Brown.)

15, 30 and 35 types, and stated that said catalogue represented all the types of heaters which the plaintiff was now marketing except No. 9, which is similar to No. 8, only that it has two more heat units, and in proportion is a little larger in size. The document was then offered in evidence and marked "Plaintiff's Exhibit 9."

Defendant also offered in evidence an exhibit referred to in the former case as "Plaintiff's Exhibit 18," for the purpose of showing the types of heaters of the plaintiff, numbered 4, 5 and 6, and the same was marked "Plaintiff's Exhibit 10."

At this point it was stipulated between counsel that the testimony given by George J. Henry in rebuttal in the prior case No. 492 should be copied into the record of the present case with the same force and effect as if taken in the case at bar, and the same is as follows:

**Testimony of George J. Henry, for Plaintiff
(In Rebuttal).**

GEORGE J. HENRY, being duly called as a witness on behalf of plaintiff, testified as follows:

I am 48 years of age and reside at the City and County of San Francisco. I am mechanical and electrical engineer and patent solicitor. I have been following the profession [102] of mechanical engineer for 26 years; and I have been engaged in designing and manufacturing mechanical and electrical and physical devices over practically all of that period of time. I have taken out a number of

(Testimony of George J. Henry.)

patents on inventions of my own. I have practiced before the Patent Office for the last seven or eight years in connection with my professional work. I am a member of the American Society of Mechanical Engineers, American Society of Civil Engineers, associate member of the American Institute of Electrical Engineers. I have examined a great many mechanical devices, including heaters, and electrical devices generally, reported on some of them, and had a good deal to do with the designing of many devices in this field.

The Morse patent 881,017 of March 3, 1908 (Defendant's Exhibit "F") shows an incandescent electric bulb mounted inside of a reflector, and a wire cage or guard stretched across the reflector in front of the incandescent lamp. The device is labelled "Heating device." The reflector is presumably of hemispherical shape, and the lamp is materially out of focus in the curve in Fig. 1, the wire screen set relatively close to the lamp and well within the reflector. The device is a therapeutical instrument and is intended for that purpose. The invention relates to a device for applying heat to a portion of one's body, and is intended to be used in the practice of therapeutics. It is a small instrument to be taken in one's hand and carried around and applied to any place where you want heat transmitted. It is principally for that purpose. The handle of the incandescent lamp serves as the handle for the device, and also as a socket for the incandescent lamp. It has no standard or anything

(Testimony of George J. Henry.)

of that kind, and is for the purpose of concentrating the heat upon the affected parts as you move it around in your hand from one spot to another to [103] apply the heat, apparently by setting it directly over the part itself, not by reflection, but by holding the heat of the bulb within the container.

In the English patent, entitled "Simplex Conduits, Limited" (Defendant's Exhibit "II") I find a conical-shaped container fluted on its outer surface, at least in the preferable form and in all the forms illustrated. It is mounted upon a standard and swivels in any direction, the standard carrying a U-frame which is pivoted to the conical-shaped reflector. The heat element is a long resistance wire *would* upon insulating material located about the axis of the cone, but not coincident with the axis. A wire screen is stretched across the front of the conical opening, so that the whole thing has the appearance of a funnel. The device which you now hand me appears to be the device described in the English patent. The interior of the cone is corrugated, made of copper or plated with copper. The wire screen is a wire mesh, what is known in the trade as wire cloth or wire mesh, fixed in an annular frame, which may be slipped over the front of the heat opening of the conical reflector. It is mounted on horizontal trunnions and also on a vertical swivel or trunnion, so that it can be swung in any direction up or down, or around a vertical axis. That portion of the specification which refers to changing the cone to a parabola, commencing at line 25, page 3 of the specification, reads as follows:

(Testimony of George J. Henry.)

"We have found that a diameter of the large end approximately equal to the depth of the cone gives good results, but the cone angle may be greater or less than that was indicated, or the reflector may be in longitudinal section, in whole or in part, or of a parabolic or the like contour, according to the form desired for the emergent beam of rays."

With regard to the sufficiency of that disclosure as to instructing a person to make the heater of parabolic shape instead of conical shape, I don't think it is any more specific as regards any other shape than that shown that would be perfectly apparent to anyone in the art. A parabolic reflector [104] to have any useful function, would have to be, as the expert on the other side, Mr. Beam, stated, it would have to have its source of heat located at the focus of the parabola; and with the long element that is here shown, I cannot see how a parabola could possibly be effective, for the purpose of directing the rays in any better shape than this cone does. After carefully reading the patent, I came to the conclusion that the inventor had in mind, rather, the form of the curve of these inverse flutes rather than substituting a parabolic form of the whole cone. These individual flutes might easily be curved parabolically in such a way that the focus of the parabola, or rather, the locus of the foci of the parabola of a single flute would be coincident with the center of the heat element; but I cannot conceive a parabola in the plane of a heat element as the

(Testimony of George J. Henry.)

substitution for this cone which would perform any of the functions of reflection aimed at by the patentee when he says, "You can direct the beam as you choose by changing the shape of the reflector." With such a long heat element, the divergence from the focus of any single parabola would be so great over most of the portions of the heat element that your emitting area would not be anywhere near a parallel beam; it would be widely divergent from it. I am very sure that the most accurate parabola that could be constructed as a substitute for a curve—and I have in mind now such a parabola as has been presented here as made by the Westinghouse company—such a reflector as that, I am very sure, would get hot and make a divergent beam that would cross a dozen times, probably, in the parabola before it got out, and would make a very wide divergent beam. I am referring to the model made by the Westinghouse Company of the English Simplex patent, or any similar reflector made of parabolic to be this form of heat element and based on any teaching contained in the Simplex patent. The [105] conical fluted type of reflector is the only one shown in the illustrations.

Plaintiff then offered in evidence the device representing the English patent testified to by the witness, and the same was marked "Plaintiff's Exhibit 7."

I have examined and understand the Warner patent, No. 1,120,003, dated December 8, 1914, Defendant's Exhibit "H." The device which you now

(Testimony of George J. Henry.)

hand me I believe to be the same device as described in this Warner patent. The striking feature of this device when you look at it from the front is the heat element, and its location with respect to the other parts. It is annular in shape and occupies a large portion of the entire device. The large cage covering it is very prominent in appearance. Of course, if the device were lighted up the incandescent lamp will also be a noticeable feature. There is an incandescent lamp in it, and the lamp is also shown in the model which you *hand* handed me *arc* concerning which I have testified.

Plaintiff then offered in evidence the said device or model referred to by the witness as representative of the Warner patent, and the same was marked Plaintiff's Exhibit 8.

(Witness continuing:) The device which has been put in evidence by defendant and marked Defendant's Exhibit "L" is representative of this Warner patent, and I do not consider it a fair representation thereof. It has a very materially different appearance. The same elements are present, and probably function the same way, but they are materially different in size of proportion and respect to each other. The heat element is located much deeper in the reflector than in the first one you handed me. It is also much smaller in cross section relatively, resulting in a very much less prominent appearance. It is the dominating element in the appearance in the patent drawing and also in the heater which you have handed me (Plaintiff's

(Testimony of George J. Henry.)

[106] Exhibit 8) as distinguished from Defendant's Exhibit "L."

Referring further to the English Simplex patent, I note that it does not very prominently show in its illustration a guard wire over the front. It states that it should be fitted with coarse wire mesh or the like, but that does not appear in the illustration, it is not shown in the illustration.

Referring to a model which has been put in evidence by the defendant marked "Defendant's Exhibit 'J,'" as illustrative of the Simplex English patent, I do not consider that the model correctly represents the patent, although it might easily be a construction which one skilled in the art, looking at the Simplex picture and reading the Simplex description, might arrive at a variation. It is materially different from the drawings in the Simplex patent. The heat element is relatively shorter. The reflector is curved and smooth on its inner surface instead of fluted, and is provided with a special form of wire guard, whereas no form of wire guard is illustrated in the Simplex patent.

Cross-examination of G. J. HENRY.

On cross-examination the witness testified as follows: I am a practicing attorney as well as engineer, and at present am associated with Mr. Miller, counsel for plaintiff, in connection with some work. I have stated that the drawing of the Simplex Conduits patent, No. 19,971 of 1913 shows no guard for the heater. I consider that part marked "H" shown in Figs. 2 and 3 of sheet 1 of the draw-

(Testimony of George J. Henry.)

ing, also in Fig 7, to be the frame work on which the patentee intends to stretch a wire mesh, which wire mesh is mentioned in the specification. The specification does say on page 3, line 21, "The end of the reflector is fitted with a guard H, to protect the heating element." Now, if he intended the element H of Figs. 2, 3 and 7 to be the guard for the heating element, then I am at a loss to interpret some of his drawings. [107] Take, for example, Fig. 7: This Figure 7 is "A view similar to Figure 3 of a modification with three heaters." He shows the lines H commencing apparently at the small end of the cone and entirely disconnected in any way from the outer ring; consequently I cannot see, judging from that figure alone, how that can be a guard across the front of the reflector, although it might be a ring inside and around the three elements of Fig. 8. The same testimony applies to the showing in Figure 3. The guard seems to be away inside of the reflector. I find nothing in any of the other figures to clear up such a hiatus. Figure 2 shows the guard H extending apparently all the way from the outer ring and as such it would be a three-wire guard extended across the front of the heater with a circular opening at the center; but it would so radically diverge from the wire mesh mentioned in the body of the specifications, that I am inclined to think he did not mean it as a guard across the front of the heater in the sense of the wire mesh shown, for example, in the

(Testimony of George J. Henry.)

model Plaintiff's Exhibit 7. I have criticised the portion of the patent specification relative to the parabolic curvature reflector as not adapted for use with the heater element here shown, on account of the length of the heater element. It has not occurred to me that if the reflector were made more shallow the heater element would naturally be made shorter to correspond. Quite the contrary. With the type of parabolic reflector shown in Defendant's Exhibit "J," the heat element would be shorter rather than longer. Generally speaking, the shorter the distance between the focal point and the directrix in two parabolas, the less will be the permissible area of volume within which your heat should be generated. In this case of Defendant's Exhibit "J," we have rather an acute parabola, one in which the focus is very deep seated, nearly to the bottom. The result would be that your heat element in such parabolic reflector would be very [108] much smaller proportionately than if the focus were much further forward; in other words, if the parabola were flatter. I take it that it is well within the scope of the presumed knowledge of the designer to proportion these parts to suit the conditions imposed by the laws of heat generation and radiation. If you have any definite set or parts to work to, he could undoubtedly proportion a curve that would be well suited to those particular parts, but my testimony was in reference to a long heat element. In this particular Defendant's Exhibit "J" type of

(Testimony of George J. Henry.)

parabola, it is a fact that the heat radiating from the outer portions—I think I am safe in saying that nine-tenths of the outer portions of the heat units upon being received upon the wires by the reflector will be projected inward into the reflector instead of outward.

THEREUPON PLAINTIFF RESTED.

At the request of defendant's counsel it was stipulated that the following testimony of the witness Victor S. Beam given in case No. 492 should be copied into the case at bar with the same force and effect as if taken herein, and the said testimony is as follows:

Testimony of Victor S. Beam, for Defendant.

I am 44 years of age and reside at Maplewood, New Jersey; my occupation is electrical and mechanical engineer with offices at 165 Broadway, New York City, I graduated in Electrical Engineering from Princeton University, in 1899. From there I entered the employ of the Westinghouse Electric & Mfg. Co. in July, 1899, and have been connected with that Company either directly or indirectly ever since. I am still in the employ of that company. During my employment with the Westinghouse Company and others I became quite generally familiar [109] with the design and operation and construction of various electrical devices and machines manufactured in this country and have always followed the electrical heating art

(Testimony of Victor S. Beam.)

quite closely. I am quite familiar with the laws and rules governing those devices and the design and operation of the same.

The following question was propounded to the witness by defendant's attorney, viz:

"Q. Please give the pertinent portions of the history of this specific art as applicable to the plaintiff's and defendant's heaters now before the court?"

Plaintiff's counsel objected to said question as entirely improper because it calls for the opinion of the witness in that it calls for what he considers to be the pertinent part of the prior art and also those parts that are applicable to this device.

The objection was overruled, to which ruling plaintiff excepted, and thereupon the defendant's witness answered as follows:

"A. These devices and the patents relate to a special form, a special type of electric heating, namely, the heating of the object; they are not attempting to heat the whole room or enclosure in which the object is located. The object is usually a person who wants to be warmed, and that purpose necessarily brings in the matter of portability; the device should be portable, so as to be carried around from one place to another in the room, or from one room to another; and of course, if the owner moves from one part of the city to another, to take it with him. It is related quite closely to the electric light art. It was quite old to have flash lights to carry around when you wanted to light up a particular object; you would not

(Testimony of Victor S. Beam.)

have enough current to light the whole room, but you would simply light the particular object you were interested in. They have search-lights on boats and other places, selective in application so that they only light up one or a few objects at a time. [110]

They have had flood light projectors, in which large quantities of light were generated, and used to light up large objects, and oftentimes buildings. That art is quite old. Flood lighting was done in numerous places, and I daresay it goes back to 1905 and 1906, at least, but it reached almost perfection at the Panama Pacific Exposition in 1915 at San Francisco. The previous World's Fairs had been lighted in a very extensive manner, with the requirement of wiring the outside of the building. At the Buffalo Exposition in 1901, that was quite a feature; they used current from Niagara Falls to light up the outside of the building, in order to get the esthetic effect. That was much advertised. In the exposition in 1904 at St. Louis that plan was likewise followed, but at the Panama Exposition in San Francisco they simply selected the object in a large area and lighted that up. Also headlights use the same scheme. Of course, heat and light are really undistinguishable, because no one has yet produced a source of light that does not give heat; that is the great object that nobody has yet done. Likewise, when you try to get electric heating, you do not get it very effective unless you have some light with it to attract the eye; you must light up the device, because there is a certain amount of psychology about

(Testimony of Victor S. Beam.)

it; you have got to have people attracted by the heat and the light.

Now, the first projecting device for heat of which I have knowledge was the device shown in Morse's United States Patent, No. 881,017. There an incandescent lamp, probably an inefficient one, was placed in front of a concave surface, with a guard in front to protect it, and that was used as stated in the patent, to concentrate the heat upon the affected part. In that particular case, it was sought to apply heat to certain portions of the body; that would be usually held quite close [111] to the body, but it has the principle there of selecting the object you are going to heat, and throwing the rays all in one direction. Quoting from lines 71 to 77 of this patent, I read:

'The feature of mounting the electric lamp in a horizontal position within the reflector is considered highly advantageous, as by this arrangement, the lamp projects its heat more efficiently onto the surface of the body, and furthermore, the socket of the lamp then operates effectively as a handle, facilitating the handling of the heating device.'

There in that device you have both heat and light projected in a beam onto a selected object.

Now, another early device was gotten out by the Westinghouse Electric & Manufacturing Company about 1912 or 1913 and was shown in the Geiger patent, No. 1,194,168, granted August 8, 1916. This device was put on the market, and has been on sale ever since by the Westinghouse Company. That

(Testimony of Victor S. Beam.)

device consisted of a concave structure, a shell somewhat resembling a seashell, the idea being to make it extremely ornamental; the heat source in that case was carbon wires or coils inside of tubes. It is, in effect, an incandescent electric lamp, although of low efficiency, so far as light is concerned. But the device was made in considerable quantities, and gave out both heat and light, and projected the rays of both heat and light in a definite direction, selective, so as to light and heat the object. The patent says, 'Although the reflector 8 is shown of the clamshell design, it is understood that such a reflector may be of any other design or form,' and as to the source of heat and light it says 'preferably it should be of luminous type, preferably arranged side by side and extend upward in front of the reflector. It is understood that other suitable types of heating units may be employed with my invention.' [112]

Now, that device was extremely ornamental; it was not as efficient as some of the devices to-day, and of course it is objectionable in that these lamps break quite readily; an incandescent lamp at its best is quite fragile, and it has many objections, but it was highly ornamental. I have one of these here, and produce the same, which consists of a clamshell coppered on the inside, pleasing in appearance, with incandescent lamps placed within the curvature of the shell, and is a device that a housewife would not certainly object to having around. They might not possibly buy it simply for the beauty of it, but it certainly is more pleasing in appearance than some of

(Testimony of Victor S. Beam.)

the more practical devices which have followed it. That, as I say, was built by the Westinghouse Company quite a number of years, and it was about the only type of heater that it could build at that time, prior to say the middle of 1917, because while it was recognized that incandescent lamps were not the best sort of thing to generate heat for that purpose, the advisability of utilizing the more efficient form of wire was doubted by the Westinghouse Company, first because there was considerable doubt about the wires which were then on the market standing up, that is, their resisting oxidation, and the other handicap that presented itself was the patent situation with respect to the nickel-chromium alloy of the heating element, the only heating element that would stand up in exposed conditions, when being burned or illuminated. When an electric wire is exposed to the air, heated to a luminous state, it is attacked so readily by the oxygen of the air that it almost immediately burns up; the carbon filament in a lamp would not last an instant if exposed to the air; they have to put that in a vacuum. Of course, there are a lot of heat applications where you cannot use lamps, and there were devices using wire on the market, but to a great extent they were in places like [113] in a flat-iron where your wire is covered up and not exposed to the air, so that while there were, prior to the middle of 1917, considerable heating devices on the market, and quite a number with the wire exposed, yet there was a patent situation there that had not been cleared up, and it was not until

(Testimony of Victor S. Beam.)

1917 that the Westinghouse Company felt free to extend its operations in that particular field. That patent situation was the result of a patent to Marsh, that was granted in 1906 but it was some years before it was put in litigation, and it developed very slowly under it, because it was held by a comparatively small company, and the litigation was longdrawn out, and that was not finally decided until some time in 1915 by the Court of Appeals of the Seventh Circuit, the case of Hoskins Electric Manufacturing Co. v. General Electric Company. In that case, from which I have an extract, the court pays great tribute to the alloy for making up a heating device. It said:

‘The invention of toasters, heaters’—

Mr. MILLER.—I object to his going into this matter. I don’t know what he is reading from, so far as that is concerned, but I do not think it is proper for him to go into a matter of this kind regarding the Marsh patent. The Marsh patent decisions are reported in the Federal Reporter, and we have access to them.

The COURT.—Yes.

A. (Continuing.) That alloy which is sold under various trade names, one of which is Nichrome, has the distinguished ability to stand up, to resist oxidation when it is red hot, and it is the use of that alloy, the availability of that alloy to the electrical art that has made possible a large number of devices and particularly the devices in question here; that is, the radiant heaters, where the heating element must necessarily be exposed to the air when in operation. [114]

(Testimony of Victor S. Beam.)

I may have given the impression yesterday that a nickel chromium composition was the only wire that could be used in an exposed heater of that sort. I should correct that, as it would be possible to use platinum if the same could be obtained, but as that is very scarce and very expensive, it is practically out of the question.

The next and perhaps the most interesting prior device of the reflecting heater is that shown in the British patent No. 19,971, of 1913, of the Simplex Conduits Limited. That shows a reflecting heater in several views. The reflector is shown in the figures as a fluted cone, but it mentions in the description that that reflector may have various forms, one of which is a parabola. That appears to be the same device that is shown in exhibits Nos. 9 and 10. Now, the form shown in the drawings is rather of an ornamental nature, in that it has the fluting. That does not tend to its efficiency.

Mr. MILLER.—I object to this line of testimony.

The COURT.—Yes.

Mr. MILLER.—When he undertakes to say that it does not tend to its efficiency, or something like that, that is something beyond the theory of this case.

The COURT.—Yes, I think so.

A. The device as shown in Figure 1 consists of a stand which is somewhat like the stand that is used for electric fans. It consists of a dome-shaped piece, and of a vertical standard, and then mounted in that is a U-shaped trunnion; that is the form illustrated in the Westinghouse device in this case; then the cone-

(Testimony of Victor S. Beam.)

shaped reflector is mounted so as to tilt in that trunnion, and, therefore, the direction of the light rays is adjustable. Figure 1 is a side view of the whole device, Figure 2 is a front view, the trunnion arrangement [115] being shown in dotted lines. Now, as I say, the fluted cone-shape is shown in that figure for the reflector, but in the provisional specifications it is set forth that the condensed beam of rays may be divergent or approximately parallel or convergent, meaning that the reflector may have various forms, and then, further along, in the second paragraph it says the reflector is preferably in the form of a cone, this being a shape which can be cheaply rolled into form out of a sheet metal. Then, further along in line 34, it says, 'or the reflector may be in whole or in part of parabolic or the like contour, according to the form desired for the emergent beam of rays.' Then, further on, line 40, in respect of the reflector, it says:

'It may with advantage be corrugated or fluted, as this stiffens it and improves its internal appearance when the heating element is incandesced.'

So that while it is shown as a corrugated reflector, it is contemplated that it be perfectly smooth on the inside and that it may take the form of a parabola, or the like.

Further, in the provisional specifications line 42, it says:

(Testimony of Victor S. Beam.)

‘We prefer to mount the reflector pivotally on a forked stem, which, itself, can pivot on a foot bracket, so that the beam of rays can be turned to point in any direction.’

And then in the complete specifications, line 37, it speaks of the color of the inside of the reflector; it may be of a cast metal lined with copper, and that it may be wholly corrugated. The heating element in this case is arranged in line with the longitudinal axis of the cone or the parabolic reflector, as it may be, and that is an arrangement of coil tends to give uniform distribution of the light rays. It must be recognized in this art that you cannot get your source of light down to a single point. Your coil takes up space, and therefore you [116] cannot get your light source at any geometric or mathematical point; so that you may go to a great deal of trouble to get your reflector mathematically perfect, but you will be thrown out from your calculations by the fact that you cannot get your heating element down to a point; it takes up a space, and, therefore, it is quite advisable to make your reflector conform to the shape of your heating device, or accommodate itself to the requirements of the heating device. A guard is shown in this patent designated by the letter H. It is shown in Figures 2 and 3. It consists of a central ring, with three radiating spokes to support it. I have had a device made up in accordance with this patent for illustration and herewith produce the same. I have had both the corrugated reflector and the parabolic reflector made. The parabolic re-

(Testimony of Victor S. Beam.)

reflector is mounted in the trunnion, and the corrugated reflector is separate. The form of guard shown in that particular exhibit I have made up is that shown in exhibit No. 9 in this case.

Another illustration of the prior art devices is the Warner patent No, 1,120,003, granted December 8, 1914, United States patent. That patent shows—

The COURT.—Cannot you save time by introducing these? I think they are clear enough without lengthy explanations of them.

Mr. CARR.—I do not think it is necessary for the witness to state very much. He might state a word or two with reference to the patent.

The COURT.—Where there is a cut or illustration together with an explanation, it would seem to be quite obvious. It is a question largely of appearance.

Mr. CARR.—I think perhaps that any features that might be deemed necessary and advisable to bring more definitely [117] and specifically to your Honor's attention could be done in the argument.

The COURT.—Yes.

Q. You say this is an American patent?

A. Yes. I was simply going to add that that form of heating coil is not the best, and they had used the lamp in there to illuminate the device, to get the red effect. It shows a concave bowl, mounted on a stand, handles for carrying it. It has, I would say, a rather inefficient form of heating coil, and they have taken the precaution of putting a double casing on there in

(Testimony of Victor S. Beam.)

the rear of the reflector. That is to prevent the part that the public might touch, marked "c" from becoming heated from the coil—as a matter of protection there. There would be a dead air space in between the curved line "e" and the curved line "f."

Another American patent is one to Milton H. Shoenberg, assigned to the Majestic Electric Development Company, San Francisco, and is numbered 1,109,551, and dated September 1, 1914. One particular thing shown in that patent is two linings to the casing, the dead air space in between, as shown specifically in Fig. 10; it has the bowl-shape reflector, the heating element arranged within the curvature of the same, and it has a guard to protect the heating element from being touched. I would call particular attention to the arrangement of the heating coil with respect to the reflector. You will see that that arrangement runs through all of the devices produced here as the product of the Majestic Electric Development Company, the plaintiff. The coil is arranged transverse to the longitudinal axis of the reflector. That arrangement of the coil has some drawbacks, as it is difficult to arrange it uniformly with respect to the reflecting surface, and portions of the [118] reflecting surface are liable to get very warm, and it is necessary to take some precautions to overcome that arrangement. In the latter forms of the Majestic devices, a flange is provided for protecting the public from being burned by the heat which would be generated in the reflecting surface, and also there is provided that double casing, an

(Testimony of Victor S. Beam.)

additional curved member at the back of the reflector, so as to prevent the public from touching the heated reflector. As I understand it, the intent was to get the coil as near to the focus as possible. Looking at it one way, that is accomplished, but since the coil must have length, it would get very much out of focus at the ends, and that is the part that causes the trouble in the heating of the reflector. That necessity for the flange in the Majestic devices, and likewise for the extra casing is clearly set forth in patent 1,245,084 to E. N. Brown, dated October 30, 1917, in which it says:

At this point counsel for plaintiff objected to this testimony, as being directed purely to the utility of the device, and that the witness is now proposing to read from another patent and the court ruled that the objection was well taken.

Thereupon the witness continued as follows:

A. I simply want to mention that the Porter U. S. Patent No. 684,459, granted October 15, 1901, shows a form of guard which might be used in this form of heater; although the device there has the appearance of a fan, and is a fan, it is a fan equipped with a heating element, so that it may blow warm air instead of cool air. When the Westinghouse Company started to design the present type of heater, it had available the straight-line coil of the Simplex Conduits device, and it had the curved reflecting device of the Warner patent, No. 1,120,003. It recognized the fact that it could not get a heating coil at a single point, and that the coil would have to have length, so it arranged its

(Testimony of Victor S. Beam.)

coil in the same order that the Simplex Company of England, had arranged its coil, and utilized the curved reflector of the [119] Warner patent, although it is also clear from the Simplex Conduits Company patent that practically any form of reflector may be used. I have shown in the exhibit 1 one form of parabola, but as a parabola may take many forms, depending upon the distance that you take between the point called the focus and an outside line called the directrix, the law of a parabola being that the distance from any point on the curve to the focus must be the same as the distance to the line on the directrix; but the parabola, as I say, may take many different forms, and when you get a parabola of a wide flare, that is, the distance between the focus and the point on the line, large, you approach a curvature of a circle, so that like in some of the devices here, though one may be a parabola and the other a circle—it is extremely difficult to tell which—a reflector in the form of a segment of a circle cannot, strictly speaking, have a focus, and in the Westinghouse device it is not attempted; it is recognized that it could not have a focus, and no attempt is made to get one; in fact, the heating coil is strung along, extended along the longitudinal axis, and the curve of the reflector is made so as to accommodate that, so that the light, going from any point on that coil, is reflected properly. The Westinghouse device has a reflector corresponding to the arc of a circle, and that gives a very wide beam of light, and the coil being arranged on the transverse longitudinal axis,

(Testimony of Victor S. Beam.)

gives a very good heat distribution over the surface of the reflector, so that the reflector keeps cool itself and it needs no provision for protecting the public from the heat, and likewise it has no double casing at the back to provide a dead air space and prevent the public coming in contact with heat. Of course, it has a guard in front to protect the public from coming in contact with the heated coil, such as they provide guards on electric light reflectors and on fans; they are very old and necessary expedients. [120]

The COURT.—Q. You say the reflector on the Westinghouse device does not become hot?

A. No, not as on the others, where the coil is not arranged properly.

Q. It does not become as hot as the Majestic?

A. No; that has been my experience. The reason for that is, the Westinghouse device is not designed along mathematical or geometrical lines; its design is rather imperical; but it was designed with the appreciation that a straight-line coil on a longitudinal axis is the only proper device; and it has discarded the [121] idea of making the reflector parabolic. A parabolic curvature is theoretically the proper one, if you have got a point for the source of your light and heat. In this case it is both light and heat. If you want strictly parallel rays, you only need to take a parabola and put a point of light at the focus and you will get strictly parallel rays, but the difficulty of that is that your coil must have size, and when you get out of the focus then that more than overcomes any nicety

(Testimony of Victor S. Beam.)

which you have in mind in arranging the curvature of your reflector."

Continuing in answer to questions propounded by defendant's counsel the witness testified as follows:

There are not any features or characteristics of Defendant's Exhibits "A," "B," "C" and "D" which are not readily and obviously apparent to the Court as to which I could give any enlightenment. I think they are all quite clear on the face. I have called attention to the arrangement of the heating coil and called attention to the fact that there are some elements of the earlier ones, the fluted stand, for instance, that is not in the latter device, that is not in the No. 7 heaters. A close inspection shows that the reflectors of all four devices built earlier than No. 7 have a single thickness, that is, in the earlier devices, No. 1, No. 2, 2b, and 3 (Defendant's Exhibits "A," "B," "C," and "D") had a single thickness of the reflector on the back, whereas in No. 7 there are two thicknesses giving a dead air space in between. I might add that double casing allows of bringing out of the electric leads a little better form. You will notice that in all of these prior devices there are two exposed terminals, requiring insulation, sufficient to protect from the atmosphere, whereas in the No. 7 device all that is arranged on the inside, between the two casings, so that the leads come out through a single opening; that is a much better arrangement. Of course the reason for the two connections comes from [122]

(Testimony of Victor S. Beam.)

the fact that they use a transversely arranged coil, and it is necessary to make contact at the two ends of that coil; of course the coil being long requires that the connections to it be quite a distance apart, so that necessitates bringing the contacts out from the rear of the casing at quite a distance from each other. I might point out that with the straight line form of heating coil, as used in the Westinghouse device, that connections to the coil can be made much more readily and without having a double casing. Of course, I point out that the earlier devices were nickle plated, whereas the later ones are copper colored. With reference to No. 1, 2, 2b and 3 appearing here as Defendant's Exhibits "A," "B," "C" and "D," those early devices do not have the marginal, relatively wide marginal flange and the double casing found in No. 7 Majestic heater, those earlier devices do not have those protective features.

Cross-examination of Witness BEAM.

On cross-examination the witness BEAM testified as follows:

I am one of the salaried employees of the Westinghouse Electric & Mfg. Co. and have been such since 1916, but either directly or indirectly I have been connected with them since 1899. The principal place of business of that company is at Pittsburgh, but they have offices in New York City, and I have a room there in those offices as any other employee would have. I am the mechanical and electrical expert employed by them in reference to their

(Testimony of Victor S. Beam.)

various devices. In reference to nichrome wire used in some of the devices, it is the wire referred to by me as being covered by the Marsh patent and used by the Westinghouse Company in its coil under a license from the owners of the Marsh patent. The final arrangements for the license were made in the middle of 1917, prior thereto the Westinghouse Company used in the unexposed heating element a wire made by the [123] Driver Harris Company which had no chromium in it, and also some nichrome wire made by the Driver Harris Company and some excello wire, a German wire. While the final arrangements with reference to the license were not completed until the summer of 1917, we actually had the license through our subsidiary company, the Westinghouse Electric Products Company, some time before that, but there was considerable litigation over the matter so that the whole subject was not cleared up until the summer of 1917. This Excello wire which I referred to was on sale in the United States, but during the war it was impossible to get it. I believe it was on sale as early as 1912, and I believe anybody in the United States could use it who chose to purchase it, if he overlooked the Marsh patent for the time being. The Westinghouse Company had used some of this excello wire but they used as little as they could.

Mr. Thornton and Mr. Forsbee got up the design of the Westinghouse heater that is involved here. Mr. Thornton was an engineer in the heat-

(Testimony of Victor S. Beam.)

ing department and Forsbee was his assistant, I believe. Neither of these gentlemen came out with me and they are not available as witnesses here. Mr. Thornton is at Mansfield, Ohio, and I don't know where Mr. Forsbee is.

When I said that the Westinghouse Company had at that time available for use in getting up their design this Simplex Conduits English patent, I mean simply that that was an open public document that they could refer to if they desired, a part of the prior art. I suppose you could consider the Brown No. 7 heater a part of the prior art in a sense. I believe the Westinghouse Company began getting up this design in the latter part of 1917, but production was held up on account of the war until the latter part of 1918 I believe. As near as I can recollect, the first ones were put on sale in the latter part of 1918. [124] When I say they had available for their purpose this English patent, I do not think that they placed the English patent before them and proceeded to make a design corresponding with that patent; engineers do not usually work that way. They also had available in making up the design everything that was known at that time. They may have taken a Brown No. 7 heater and examined that and looked it over and noted its characteristics at the time they got up the Westinghouse heater. I do not know of my own knowledge regarding that matter. The Westinghouse Company has a heater here which has a clam shell reflector. They began to manufacture and sell that

(Testimony of Victor S. Beam.)

device in 1912 and 1913, and they sold devices of that kind. Mr. Geiger got up the device, and he is the gentlemen to whom the patent was issued and it has been assigned to the defendant. Defendant's counsel has produced a heater here which consists of a deep, parabolic reflector mounted on a stand, which could have been made in that way instead of making it in the way of a fluted cone. That particular device was made in Mansfield, Ohio, at our plant, and was manufactured for illustrative purposes in this case, as an interpretation of the patent. It was not manufactured for sale. We have not any like that for sale. The other device consisting of a fluted cone, that is in the same category, that is to say, it was made for illustrative purposes in this case in our plant at Mansfield, Ohio, as an interpretation of the British patent, possibly, well, possibly under my direction and possibly under Mr. Carr's. I was present at Mansfield, Ohio, when it was being made, and I think the only actual suggestion I made was to make the casing a bit thicker so that it would hold its shape. Mr. Thornton really supervised the actual construction. Mr. Carr instructed Mr. Thornton and I did, too, to make it according to the construction of the British patent.

Instructions were given by Mr. Carr as to how to make it. [125] In making the Westinghouse heater which is involved in this case, we made a flat curve instead of a deep one as shown in the Simplex Conduits device because we wanted a little

(Testimony of Victor S. Beam.)

wider spread. With a longitudinal arrangement of the coil we would have to make the bowl to fit it to get the best distribution of heat on the radiating area. They apparently found that that shape caused the best heat distribution. I am sure that is what they were after. I think it did give a better heat distribution than the particular form of parabola shown in the English patent. The patent mentions that you can get divergent or parallel or convergent rays. It gives wide instructions there. You could readily make a wider one under the patent. There are no directions in the patent as to what kind of parabola you would make, whether deep, flat or more elongated, there are no directions in there as to what kind of parabola you can make. The only suggestion about it at all would be the most natural one to make in the first instance, although you were not limited to that. You would make one of the shape more nearly corresponding to the cone shown there, you have a wide choice under the language there. That choice is left to the party who wants to make a parabolic reflector in accordance with that suggestion. It is stated in there that the interior may be smooth; that would necessarily apply as well to the parabola as to the cone. Of course the man who designed that tended rather towards the artistic because he showed the fluted cone; all those British things are rather more ornamental.

On redirect examination the witness said:

“I do not know the composition of the Excello

wire to which my attention has been called. I am quite sure it has some nickle and some chromium in it, but the exact composition of it I do not know at this time." [126]

Defendant then offered in evidence certified copy of the file-wrapper and contents of the patent in suit, and the same was marked Defendant's Exhibit "O."

J. H. MILLER,
Atty. for Plff.

[Endorsed]: Filed Dec. 17, 1920. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [127]

In the Southern Division of the United States District Court for the Northern District of California, Second Division.

No. 493.

MAJESTIC ELECTRIC DEVELOPMENT COMPANY,

Plaintiff,

vs.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY,

Defendant.

Plaintiff's Petition for an Order Allowing Appeal from Order and Decree of October 4, 1920, and from the Final Decree of November 1, 1920.

Plaintiff in the above-entitled case feeling itself aggrieved by the order and decree heretofore made

and entered in the minutes of the Court on October 4, 1920, whereby it was ordered that the bill of complaint be dismissed, and that a decree be signed, filed and entered accordingly, and feeling itself aggrieved by the final decree heretofore made and entered in the case on November 1, 1920, wherein and whereby it was ordered, adjudged and decreed that the plaintiff's bill of complaint be dismissed with costs to the defendant, which said decree was signed by Hon. Robert S. Bean, United States District Judge.

Comes now into court by its counsel and prays the Court for an order allowing it to prosecute an appeal from the said order and decree of October 4, 1920, and from said [128] final decree of November 1, 1920, to the Honorable United States Court of Appeals for the Ninth Circuit under and pursuant to the laws of the United States in that behalf made and provided, and that an order be made fixing the amount of security of costs and damages which said plaintiff shall give and furnish on said appeal, and that upon said security being given, all further proceedings in this court and the issuance of execution be suspended and stayed until the final disposition of said appeal by the said United States Circuit Court of Appeals for the Ninth Circuit.

And your petitioner will ever pray, etc.

(Sgd.) JOHN H. MILLER,
Attorney for Plaintiff.

Dated: November 17, 1920. [129]

In the Southern Division of the United States District Court for the Northern District of California, Second Division.

No. 493.

MAJESTIC ELECTRIC DEVELOPMENT COMPANY,

Plaintiff,

vs.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY,

Defendant.

Order Allowing Appeal of Plaintiff from Order and Decree of October 4, 1920, and from the Final Decree of November 1, 1920.

Plaintiff in the above-entitled suit having filed its petition for an order allowing an appeal from the order and decree made and entered in the minutes of the Court on October 4, 1920, and from the final decree made and entered in the case on November 1, 1920, accompanied by an assignment of errors:

NOW, THEREFORE, on motion of John H. Miller, Esq., attorney for plaintiff, it is

ORDERED that the said petition be and the same is hereby granted, and the plaintiff is hereby allowed to take an appeal to the United States Circuit Court of Appeals for the Ninth Circuit, from the order and decree made and entered on the minutes of this court on October 4, 1920, whereby it

was ordered that the bill of complaint be dismissed with costs to the defendant, and that a decree be signed, filed and entered accordingly, and also from the final decree made and entered in the above-entitled case on November 1, 1920, [130] wherein it was ordered, adjudged and decreed that the plaintiff's bill of complaint be dismissed with costs to the defendant.

And it further appearing that the plaintiff has prayed for a supersedeas and stay of execution of said decree pending said appeal.

IT IS ORDERED, ADJUDGED AND DECREED that the amount of security to be furnished by the plaintiff for damages and costs be and the same is hereby fixed at the sum of five hundred (\$500.00) dollars, and that upon the plaintiff furnishing and giving and filing with the clerk of the court the aforesaid bond, for damages and costs on appeal, in the sum of five hundred (\$500.00) dollars, conditioned as required by law, all further proceedings in this court and the issuance of execution be and the same are hereby suspended and stayed until the final determination of said appeal by the said United States Circuit Court of Appeals for the Ninth Circuit.

And it is further ORDERED, ADJUDGED AND DECREED that upon the giving of the bond aforesaid conditioned according to law; a certified transcript of the records and proceedings herein be forthwith transmitted to the said United States Circuit Court of Appeals for the Ninth Circuit.

Dated: November 17th, 1920.

(Sgd.) R. S. BEAN,
U. S. District Judge.

[Endorsed]: Filed Nov. 17, 1920. W. B. Maling,
Clerk. By J. A. Schaertzer. [131]

In the Southern Division of the District Court of
the United States, for the Northern District of
California, Second Division.

No. 493.

MAJESTIC ELECTRIC DEVELOPMENT COM-
PANY,

Plaintiff,

vs.

WESTINGHOUSE ELECTRIC & MANUFAC-
TURING COMPANY,

Defendant.

**Plaintiff's Assignment of Errors on Appeal from
Order and Decree Entered in the Minutes, Octo-
ber 4, 1920, and Final Decree Made and Entered
November 1, 1920.**

Now comes plaintiff herein by its counsel and specifies and assigns the following as the errors on which it will rely upon its appeal to the United States Circuit Court of Appeals for the Ninth Circuit from the order and decree made and entered in the minutes of the court on October 4, 1920, whereby it was ordered that the bill herein be dismissed with costs to defendant, and that a decree be

signed, filed and entered accordingly, and from the final decree made and entered in the above-entitled case on November 1, 1920, whereby it was ordered, adjudged and decreed that the bill of complaint be dismissed with costs to defendant to be taxed, viz.:

1. Error of the Court in making and entering the order and decree of October 4, 1920, whereby it was ordered that the bill of complaint be dismissed, and that a decree be signed, filed and entered accordingly. [132]
2. Error of the Court in making and entering its final decree of November 1, 1920, wherein and whereby it was ordered, adjudged and decreed that the plaintiff's bill of complaint be dismissed with costs to the defendant to be taxed.
3. Error of the Court in ordering, adjudging and decreeing that the plaintiff's bill of complaint be dismissed.
4. Error of the Court in ordering, adjudging and decreeing that claim 1 of the patent sued on was not infringed by the defendant.
5. Error of the Court in not holding that claim 1 of the patent in suit was good and valid in law and had been infringed upon by the defendant.
6. Error of the Court in ordering, adjudging and decreeing that the bill of complaint be dismissed as to claim 1 of the patent in suit.
7. Error of the Court in holding that the plaintiff cannot recover unless the invention disclosed by the patent in suit is generic and embodies a broad fundamental idea theretofore unknown in the art.

8. Error of the Court in holding that if the patent in suit covers only minor improvements in a known mechanism there could be no infringement.
9. Error of the Court in holding that the invention disclosed by the patent in suit is not generic and does not cover a broad fundamental idea theretofore unknown in the art.
10. Error of the Court in holding that the patent in suit by claim 1 does not cover a generic idea.
11. Error of the Court in holding that the patent in suit by claim 1 covers only minor improvements in a known mechanism.
12. Error of the Court in holding that claim 1 of [133] the patent in suit covers a combination, in which one of the elements is a broad flange arranged around the edge of the reflector.
13. Error of the Court in holding that the broad flange arranged around the edge of the plaintiff's reflector is not found in the defendant's heater at all.
14. Error of the Court in holding that the equivalent of the broad flange arranged around the edge of the plaintiff's heater is not found in the defendant's heater.
15. Error of the Court in holding that the turned-over edge of the defendant's reflector is not the mechanical equivalent of the annular member extending outwardly from the margin of the reflector in plaintiff's device referred to and so specified in claim 1 of the patent in suit.
16. Error of the Court in holding that the primary purpose of the turned-over edge of the de-

defendant's reflector does not perform the function for which the annular member extending outwardly from the margin of the plaintiff's reflector was designed.

17. Error of the Court in holding that if the turned-over edge of defendant's reflector performs the function for which the annular member extending outwardly from the margin of the plaintiff's reflector was designed, that such function was merely incidental.

18. Error of the Court in holding that the primary purpose of the turned over edge of the defendant's reflector is to give to the reflector strength and a finished appearance.

19. Error of the Court in holding that the Shoenberg patent, No. 1,109,551 of September 1, 1914, anticipates the patent in suit in so far as concerns the general principle or generic idea.

20. Error of the Court in holding that the difference [134] in contour of the reflector of the Shoenberg patent and the patent in suit was not of the essence.

21. Error of the Court in holding that the Shoenberg patent above referred to embodies the beam type principle of heater.

22. Error of the Court in holding that said Shoenberg patent discloses the purpose or principles of the generic idea of the patent in suit.

23. Error of the Court in holding that the difference between the device shown in the said Shoenberg patent and the patent in suit was a difference in degree only.

24. Error of the Court in holding that the principle of the patent in suit was disclosed in the English patent to Kempton, No. 12,320.

25. Error of the Court in holding that the said principle is suggested in the United States patent No. 881,017 of March 3, 1908, to Morse.

26. Error of the Court in holding that the principle of the patent in suit is completely disclosed in the English patent of the Simplex heater No. 19,871 of September 4, 1914.

27. Error of the Court in holding that the device of the said Simplex English patent was manufactured before the application for the patent in suit was filed.

28. Error of the Court in holding that the United States patent No. 1,120,003 of December 8, 1914, to Warner, was or is material.

29. Error of the court in holding that United States patent No. 1,194,168 of August 8, 1916, to Geiger was material.

30. Error of the Court in holding that the English patent No. 102,070 of November 16, 1916, to Taylor was material.

31. Error of the Court in holding that the "Ferranti Fires" devices, stated to have been generally advertised as early as 1911 was material. [135]

32. Error of the Court in entering its order and decree in the minutes on October 4, 1920, through and by Honorable Maurice T. Dooling, the District Judge who was then presiding, whereas the case was tried by and before Frank S. Dietrich, U. S. Dis-

trict Judge of Idaho, and the written opinion in the case was rendered by him.

33. Error of the Court in making and entering its order and decree of October 4, 1920, through and by Honorable Maurice T. Dooling, District Judge presiding, whereas the case was tried by and before Honorable Frank S. Dietrich, U. S. District Judge of Idaho, who had been specially designated to act as a trial judge for the Northern District of California only for the months of August and September, 1920, and such authority and commission expired on the last day of September, 1920.

34. Error of the Court in making and entering its decree of November 1, 1920, through Robert S. Bean, District Judge, whereas the case was tried by and before Honorable Frank S. Dietrich, United States Judge of Idaho, who had been designated and appointed to hold United States District Court for the Northern District of California during the months of August and September, 1920, only, and his authority and commission expired on the last day of September, 1920.

NOW, THEREFORE, in order that the foregoing assignments of error may be and appear of record, the plaintiff presents the same to the Court and prays that the same may be filed and such disposition be made thereof as is in accordance with the laws of the United States in that behalf made and provided, and prays that said final decree be reversed, and that the District Court of the United States for the Northern District of California, Second Division, be directed to enter an interlocutory

decree in favor of the plaintiff and against the defendant [136] in the usual manner and form, adjudging and decreeing the validity and infringement of claim 1 of the patent in suit, and enjoining any further infringement thereof, and referring the case to a Master in Chancery for an accounting of damages and profits. All of which we respectfully submit.

Dated: November 17, 1920.

(Sgd.) JOHN H. MILLER,
Attorney for Plaintiff.

[Endorsed]: Filed Nov. 17, 1920. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [137]

In the Southern Division of the United States District Court for the Northern District of California, Second Division.

No. 493.

MAJESTIC ELECTRIC DEVELOPMENT COMPANY,

Plaintiff,

vs.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY,

Defendant.

Bond on Appeal.

KNOW ALL MEN BY THESE PRESENTS: That American Surety Company of New York, a corporation organized and existing under and by

virtue of the laws of the State of New York and duly licensed to transact a suretyship business in the State of California, is held and firmly bound in the penal sum of Five Hundred (\$500.00) Dollars to be paid to the Westinghouse Electric & Manufacturing Company, defendant, its successors or assigns, for which payment, well and truly to be made, the American Surety Company of New York binds itself, its successors and assigns firmly by these presents.

The condition of the foregoing obligation is such that,

WHEREAS the Majestic Electric Development Company, plaintiff in the above-entitled suit, has taken or is about to take an appeal to the United States Circuit Court of Appeals for the Ninth Circuit to reverse the order and decree made and entered on October 4, 1920, and the final decree made and entered on November 1, 1920, by the District Court of the United States for the Northern District of California, Second Division, in [138] the above-entitled suit, whereby plaintiff's bill of complaint was dismissed with costs to defendant.

NOW, THEREFORE, the conditions of the foregoing obligation is such that if the said Majestic Electric Development Company shall prosecute its said appeal to effect and shall answer all damages and costs, if it shall fail to make its plea good, then this obligation shall become void; otherwise to remain in full force and effect.

Dated at San Francisco, California, November 17th, 1920.

AMERICAN SURETY COMPANY OF NEW YORK.

By D. ELMER DYER,
Resident Vice-president.

[Seal]

Attest: E. C. MILLER,
Resident Assistant Secretary.

Approved Nov. 19, 1920.

R. S. BEAN,
Judge.

[Endorsed]: Filed Nov. 19, 1920. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [139]

In the Southern Division of the United States District Court for the Northern District of California, Second Division.

493.

MAJESTIC ELECTRIC DEVELOPMENT COMPANY,

Plaintiff,

vs.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY,

Defendant.

Order Allowing Withdrawal of Original Exhibits.

Good cause appearing, on motion of John H. Miller, Esq., counsel for Majestic Electric Development Company, plaintiff in the above-entitled suit.

IT IS ORDERED that all of the original exhibits offered in evidence in the above-entitled cause may be withdrawn from the files of the above-entitled court and from the clerk thereof, and be by said clerk transmitted to the United States Circuit Court of Appeals for the Ninth Circuit, as a part of the record on appeal of the plaintiff herein to said Circuit Court of Appeals, from the order and decree made and entered in the minutes on the fourth day of October, 1920, and the final decree made and entered on the first day of November, 1920, which said original exhibits are to be returned to the files of this Court upon the determination of said appeal by the said Circuit Court of Appeals.

Dated Nov. 23d, 1920.

(Sgd.) R. S. BEAN,
U. S. District Judge.

[Endorsed]: Filed Nov. 24, 1920. Walter B.
Maling, Clerk. [140]

(Title of Court and Cause.)

Praecipe for Transcript of Record.

To the Clerk of the United States District Court:

Please prepare transcript of record on appeal from the final decree in the above-entitled suit, and incorporate therein the following, viz.:

1. Bill of complaint.
2. Final amended answer.
3. Order designating Judge Dietrich to hold court in the Northern District of California.

4. Opinion of Judge Dietrich.
5. Minute order of October 4, 1920.
6. Final decree of November 1, 1920.
7. Statement of evidence.
8. Petition for order allowing appeal.
9. Assignment of errors.
10. Order allowing appeal.
11. Order allowing withdrawal of exhibits.
12. Bond on appeal.
13. Citation.

JOHN H. MILLER,
Attorney for Plaintiff.

Dated November 23d, 1920.

Service of the within praecipe for transcript on
appeal admitted this — day of November, A. D.
1920.

D. L. LEVY,
W. SHELTON,
Attorneys for Defendant.

[Endorsed]: Filed Nov. 23, 1920. W. B. Maling,
Clerk. By J. A. Schaertzer, Deputy Clerk. [141]

In the Southern Division of the United States District Court, in and for the Northern District of California, Second Division.

No. 493—EQUITY.

MAJESTIC ELECTRIC DEVELOPMENT COMPANY,

Plaintiff,

vs.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY,

Defendant.

Certificate of Clerk U. S. District Court to Transcript of Record.

I, Walter B. Maling, Clerk of the District Court of the United States, in and for the Northern District of California, do hereby certify the foregoing one hundred forty-one (141) pages, numbered from 1 to 141, inclusive, to be full, true and correct copies of the records and proceedings as enumerated in the praecipe for transcript of record, as the same remain on file and of record in the above-entitled cause, and that the same constitute the record on appeal to the United States Circuit Court of Appeals for the Ninth Circuit.

I further certify that the cost of the foregoing transcript of record is \$61.25; that said amount was paid by John H. Miller, Esq., attorney for plaintiff; and that the original citation issued herein is hereunto annexed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of said District Court this 29th day of December, A. D. 1920.

[Seal] WALTER B. MALING,
Clerk United States District Court for the Northern District of California. [142]

Citation.

UNITED STATES OF AMERICA,—ss.

The President of the United States, to Westinghouse Electric & Manufacturing Company,
GREETING:

You are hereby cited and admonished to be and appear at a United States Circuit Court of Appeals for the Ninth Circuit, to be holden at the city of San Francisco, in the State of California, within thirty days from the date hereof, pursuant to an order allowing an appeal, of record in the clerk's office of the United States District Court for the Northern District of California, Second Division, wherein Majestic Electric Development Company, is appellant, and you are appellee, to show cause, if any there be, why the decree rendered against the said appellant, as in the said order allowing appeal mentioned, should not be corrected, and why speedy justice should not be done to the parties in that behalf.

WITNESS, the Honorable ROBERT S. BEAN, United States District Judge for the District of Oregon, designated to hold and holding the District

Court of the United States, for the Northern District of California, this 19th day of November, A. D. 1920.

R. S. BEAN,
United States District Judge. [143]

Received a copy of the within Citation on Appeal this 23d day of November, 1920.

D. L. LEVY,
W. SHELTON,
Attorneys for Defendant.

[Endorsed]: No. 493. United States District Court for the Northern District of California. Majestic Electric Development Co., Appellant, vs. Westinghouse Electric & Mfg. Company. Citation on Appeal. Filed Nov. 23, 1920. W. B. Maling, Clerk. By J. A. Schaertzer, Deputy Clerk.

[Endorsed]: No. 3617. United States Circuit Court of Appeals for the Ninth Circuit. Majestic Electric Development Company, a Corporation, Appellant, vs. Westinghouse Electric & Manufacturing Company, a Corporation, Appellee. Transcript of Record. Upon Appeal from the Southern Division of the United States District Court for the Northern District of California, Second Division.

Filed December 29, 1920.

F. D. MONCKTON,
Clerk of the United States Circuit Court of Appeals
for the Ninth Circuit.

By Paul P. O'Brien,
Deputy Clerk.

United States Circuit Court of Appeals for the
Ninth Circuit.

MAJESTIC ELECTRIC DEVELOPMENT COM-
PANY,

Appellant,

vs.

WESTINGHOUSE ELECTRIC & MANUFAC-
TURING COMPANY,

Appellee.

**Order Enlarging Time to and Including January
20, 1921, to File Record and Docket Cause.**

Good cause being shown, it is hereby ordered that the appellant in the above-entitled suit may have to and including the 20th day of January, 1921, within which to file the record on appeal and to docket the cause in the United States Circuit Court of Appeals for the Ninth Circuit.

Dated December 20, 1920.

W. H. HUNT,
Circuit Judge.

[Endorsed]: No. 3617. United States Circuit Court of Appeals for the Ninth Circuit. Order Under Subdivision 1 of Rule 16 Enlarging Time to and Including Jan. 20, 1921, to File Record and Docket Cause. Filed Dec. 20, 1920. F. D. Monckton, Clerk. Referred Dec. 29, 1920. F. D. Monckton, Clerk.

In the United States Circuit Court of Appeals for
the Ninth Circuit.

No. 3617.

MAJESTIC ELECTRIC DEVELOPMENT COM-
PANY, a Corporation,

Appellant,

vs.

WESTINGHOUSE ELECTRIC & MANUFAC-
TURING COMPANY, a Corporation,

Appellee.

Stipulation as to Transcript of Record on Appeal.

IT IS HEREBY STIPULATED that the following exhibits on file in this court pursuant to an order of the District Court dated November 23, 1920, and filed November 24, 1920, and set forth at length on pages 168, 169 of the transcript of the record herein, were introduced in evidence at the trial of this cause in behalf of defendant and appellee:

Defendant's Exhibit 11, being page 163 of a printed publication entitled "Supplement to the Electrician," published at London, England, dated August 16, 1912.

Defendant's Exhibit 12, being an advertising insert, page 2 of a printed publication, "The Electrician," dated September 20, 1912, published in London, England.

Defendant's Exhibit 13, being page 1 of the printed publication "Prometheus," dated October 3, 1906, published at Berlin, Germany.

Defendant's Exhibit 14, being page 11 of a printed publication entitled "Prometheus," dated October 3, 1906, published in Berlin, Germany.

Defendant's Exhibit 15, being page 14 of a printed publication entitled "Electrical Record," dated May 1907, published at New York City.

Defendant's Exhibit 16, being page 19 of a printed publication entitled "Electrical Record," dated May, 1915, published at New York City.

It is further stipulated that the following matter may be deemed to be inserted at page 76 of the transcript of the record herein and between the third and second lines from the end thereof, to wit, —if the Court consents thereto:

Defendant produced and offered in evidence page 163 of a printed publication, entitled "Supplement to the Electrician," published at London, England, dated August 16, 1912, and by stipulation of counsel it was agreed that the original should be withdrawn and a photographic copy thereof substituted therefor, which said photographic copy was then offered in evidence and was marked "Defendant's Exhibit 11," the same being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence an advertising insert, page 2, of a printed publication entitled "The Electrician," dated September 20, 1912, published in London, England, and by stipulation of counsel it was agreed that the original be withdrawn and a photographic copy thereof substituted therefor, which said photo-

graphic copy was offered in evidence and marked "Defendant's Exhibit 12," the same being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence page 1 of a printed publication entitled "Prometheus," dated October 3, 1906, published at Berlin, Germany, in the German language, and by stipulation of counsel it was agreed that the original be withdrawn and a photographic copy thereof substituted therefor, which said photographic copy was offered in evidence and was marked "Defendant's Exhibit 13," the same being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence page 11 of a printed publication, entitled "Prometheus," dated October 3, 1906, published at Berlin, Germany, in the German language, and by stipulation of counsel it was agreed that the original be withdrawn and a photographic copy substituted therefor, which said photographic copy was offered in evidence and marked "Defendant's Exhibit 14," the same being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence page 14 of a printed publication entitled "Electrical Record," dated May, 1907, published at New York City, New York, and by stipulation of counsel it was agreed that the original be withdrawn and a photographic copy thereof be sub-

stituted therefor, which said photographic copy was offered in evidence and marked "Defendant's Exhibit 15," the same being hereby referred to and by such reference made a part hereof.

Defendant produced and offered in evidence page 19 of a printed publication entitled "Electrical Record," dated May, 1915, published at New York City, N. Y., and by stipulation of counsel it was agreed that the original be withdrawn and a photographic copy thereof substituted therefor, which said photographic copy was offered in evidence and marked "Defendant's Exhibit 16," the same being hereby referred to and by such reference made a part hereof.

Dated: January 25, 1921.

JOHN H. MILLER,
Solicitor for Appellant.

DAVID L. LEVY,

W. G. CARR,

W. SHELTON,

Solicitors for Appellee.

In signing the above stipulation I desire to say that the original statement of the evidence as filed by me in this court is in accordance with the reporter's transcript of the evidence in the lower court in so far as relates to the above-mentioned six exhibits, and it does not appear from said reporter's transcript that said six exhibits were offered in evidence in this case, and I prepared the statement of evidence on appeal in accordance therewith and the same was stipulated as correct by appellee's attorneys. Counsel for appellee now

assert that they actually did put in evidence at the trial the said six omitted exhibits, and it is solely upon that assertion and at their request and for their accommodation that I have signed the above stipulation.

JOHN H. MILLER.

It is so ordered by the Court.

WM. H. HUNT,

Circuit Judge.

[Endorsed]: No. 3617. In the United States Circuit Court of Appeals for the Ninth Circuit. Majestic Electric Development Company, a Corporation, Appellant, vs. Westinghouse Electric & Manufacturing Company, a Corporation, Appellee. Stipulation as to Transcript of Record on Appeal. Filed Jan. 26, 1921. F. D. Monckton, Clerk. By Paul P. O'Brien, Deputy Clerk.

